# M. Des. (Industrial Design) Program

# VIT School of Design (V-SIGN)

# VIT, Vellore

## Curriculum & Syllabus

(*2020-2021 admitted students*)

VIT®
Vellore Institute of Technology
(Deemed to be University under section 3 of UGC Act, 1956)

## VISION STATEMENT OF VELLORE INSTITUTE OF TECHNOLOGY

Transforming life through excellence in education and research.

## MISSION STATEMENT OF VELLORE INSTITUTE OF TECHNOLOGY

**World class Education**: Excellence in education, grounded in ethics and critical thinking, for improvement of life.

**Cutting edge Research**: An innovation ecosystem to extend knowledge and solve critical problems.

**Impactful People**: Happy, accountable, caring and effective workforce and students.

**Rewarding Co-creations**: Active collaboration with national & international industries & universities for productivity and economic development.

**Service to Society**: Service to the region and world through knowledge and compassion.

## VISION STATEMENT OF VIT SCHOOL OF DESIGN (V-SIGN)

To be a world renowned school for producing creative professionals in the field of Art, Design, Multimedia, and Animation.

## MISSION STATEMENT OF VIT SCHOOL OF DESIGN (V-SIGN)

- To nurture industry-ready designers through holistic training in the field of Art, Design, Multimedia and Animation.
- To innovate newer methods of problem solving in the field of design using state-of-the-art research facilities.
- To produce confident & skilled professionals, trend–setters and leaders in the field of design.

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# M. Des Industrial Design

## PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

1. Graduates will be able to work in multicultural cross discipline teams effectively, to carryout complete Industrial Design independently or as a team.

2. Graduates will be able to communicate the design and other technical aspects effectively using various tools.

M. Des

The Program will prepare the students to,

1. Work in multicultural cross discipline teams effectively, to carryout complete Industrial Design independently or as a team.

2. Communicate the design and other technical aspects effectively using various tools.

(PO_01)*: Having a clear understanding of the subject related concepts and of contemporary issue

(PO_02)*: Having ability to design a component or a product applying all the relevant standards and with realistic constraints, including public health, safety, culture, society and environment.

(PO_03)*: An ability to design and conduct experiments, as well as to analyse and interpret data.

(PO_04)*: Having problem-solving ability solving social issues through design.

(PO_05)*: Having a clear understanding of professional and ethical responsibility

(PO_06)*: Having creativity and design thinking capability

(PO_07)*: Having a good cognitive load management skills related to project management and finance

(PO_08)*: Having virtual expression and digital foot printing ability

| UNIVERSITY CORE | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Course** | **Course Code** | **Course Title** | **L** | **T** | **P** | **J** | **C** |
| FLC | ENG 5001 & ENG 5002<br>(or)<br>FRE 5001<br>(or)<br>GRE 5001 | Technical English I and Technical English II<br>(or)<br>Foreign Language | 0<br><br>2 | 0<br><br>0 | 2<br><br>0 | 4<br><br>0 | **2**<br><br>**2** |
| MDE | MDE6013 | Design Management and Professional Practice | 2 | 0 | 0 | 0 | **2** |
| STS | 5001 & 5002 | Soft skills | - | - | - | - | **2** |
| SET | 5001&<br>5002 | SET Projects | - | - | - | - | **4** |
| MDE | MDE6099 | Masters Thesis | - | - | - | - | **12** |
| **Total Credits** | | | | | | | **22** |

| UNIVERSITY ELECTIVE | | | | | | | |
|---|---|---|---|---|---|---|---|
| **S.No.** | **Course Code** | **Course Title** | **L** | **T** | **P** | **J** | **C** |
| 1 | | University Elective - I | - | - | - | - | **3** |
| 2 | | University Elective - II | - | - | - | - | **3** |
| **Total Credits** | | | | | | | **6** |

| PROGRAMME CORE | | | | | | | |
|---|---|---|---|---|---|---|---|
| **S.No.** | **Course Code** | **Course Title** | **L** | **T** | **P** | **J** | **C** |
| 1 | MDE 5701 | Form and Colour Studies | 0 | 0 | 4 | 4 | **3** |
| 2 | MDE 5702 | Design Methodology | 0 | 0 | 4 | 4 | **3** |
| 3 | MDE 5703 | Art, Design and Society | 2 | 2 | 0 | 0 | **3** |
| 4 | MDE 5707 | Industrial Design | 0 | 0 | 4 | 4 | **3** |
| 5 | MDE 5705 | Basic Ergonomics | 2 | 0 | 2 | 0 | **3** |
| 6 | MDE 5708 | Computer Aided Product Design | 0 | 0 | 4 | 4 | **3** |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
| **Total Credits** | | | | | | | **18** |

## PROGRAMME ELECTIVES

| S.No. | Course Code | Course Title | L | T | P | J | C |
|---|---|---|---|---|---|---|---|
| 1 | MDE6021 | Human Factors in Design | 1 | 2 | 2 | 0 | **3** |
| 2 | MDE6002 | Entrepreneurship and Startups | 2 | 0 | 0 | 4 | **3** |
| 3 | MDE6018 | Medical Product Design | 0 | 0 | 4 | 4 | **3** |
| 4 | MDE6022 | Transportation Design | 0 | 0 | 4 | 4 | **3** |
| 5 | MDE6003 | Sustainable Product Design | 0 | 0 | 4 | 4 | **3** |
| 6 | MDE6023 | Smart Product Design | 0 | 0 | 4 | 4 | **3** |
| 7 | MDE6005 | Design Strategy and Innovation | 2 | 0 | 0 | 4 | **3** |
| 8 | MDE6006 | Service Design | 0 | 0 | 4 | 4 | **3** |
| 9 | MDE6007 | User Experience Design | 0 | 0 | 4 | 4 | **3** |
| 10 | MDE6008 | Design Workshop | 0 | 0 | 4 | 4 | **3** |
| 11 | MDE6024 | Interaction Design | 0 | 0 | 4 | 4 | **3** |
| 12 | MDE6025 | DIY Design | 0 | 0 | 4 | 4 | **3** |
| 13 | MDE6026 | Culture embedded design | 0 | 0 | 4 | 4 | **3** |
| 14 | MDE5004 | Nature of Materials and Processes | 2 | 2 | 0 | 0 | **3** |
| 15 | MDE6027 | New Technologies for Design | 0 | 0 | 4 | 4 | **3** |
| 16 | MDE6020 | Product Detailing | 0 | 0 | 4 | 4 | **3** |
| 17 | MDE6014 | Design Communication | 0 | 0 | 4 | 4 | **3** |
| 18 | MDE6015 | Integrated Design Research | 2 | 0 | 0 | 4 | **3** |
| 19 | MDE6028 | Creativity and Innovation | 0 | 0 | 4 | 4 | **3** |
| 20 | MDE6017 | Craft, Creativity and Post-Modernism | 2 | 0 | 0 | 4 | **3** |
| **Total Credits** | | | | | | | **24** |

## Credits Summary

| | |
|---|---|
| **University Core (UC)** | **22** |
| **University Elective (UE)** | **6** |
| **Programme Core (PC)** | **18** |
| **Programme Elective (PE)** | **24** |
| **Total Credits** | **70** |

## Courses Offered

| | |
|---|---|
| **Fall (1st year)** | **23** |
| **Winter (1st year)** | **24** |
| **Fall (2nd year)** | **11** |
| **Winter (2nd year)** | **12** |
| **Total Credits** | **70** |

## Benchmark Universities

1. IIT Bombay ( IDC School of Design), India
2. DELFT University of Technology, The Netherlands
3. Nanyang Technological University, Singapore

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# SYLLABUS FOR

# UNIVERSITY CORE

# COURSES

| Course code | Fundamentals of Communication Skills | L | T | P | J | C |
|---|---|---|---|---|---|---|
| ENG5001 | | 0 | 0 | 2 | 0 | 1 |
| Pre-requisite | Not cleared EPT (English Proficiency Test) | Syllabus version | | | | |
| | | v. 1.0 | | | | |

**Course Objectives:**

1. To enable learners learn basic communication skills - Listening, Speaking, Reading and Writing
2. To help learners apply effective communication in social and academic context
3. To make students comprehend complex English language through listening and reading

**Expected Course Outcome:**

1. Enhance the listening and comprehending skills of the learners
2.Acquire speaking skills to express their thoughts freely and fluently
3.Learn strategies for effective reading
4.Write grammatical correct sentences in general and academic writing
5. Develop technical writing skills like writing instructions, transcoding etc.,

| Module:1 | Listening | 8 hours |
|---|---|---|

Understanding Conversation
Listening to Speeches
Listening for Specific Information

| Module:2 | Speaking | 4 hours |
|---|---|---|

Exchanging Information
Describing Activities, Events and Quantity

| Module:3 | Reading | 6 hours |
|---|---|---|

Identifying Information
Inferring Meaning
Interpreting text

| Module:4 | Writing: Sentence | 8hours |
|---|---|---|

Basic Sentence Structure
Connectives
Transformation of Sentences
Synthesis of Sentences

| Module:5 | Writing: Discourse | 4hours |
|---|---|---|

Instructions
Paragraph
Transcoding

| | Total Lecture hours: | 30 hours | |
|---|---|---|---|

**Text Book(s)**

1. Redston, Chris, Theresa Clementson, and Gillie Cunningham. *Face2face Upper Intermediate Student's Book.* 2013, Cambridge University Press.

**Reference Books**

1 Chris Juzwiak .*Stepping Stones: A guided approach to writing sentences and Paragraphs (Second Edition)*, 2012, Library of Congress.
2. Clifford A Whitcomb & Leslie E Whitcomb, *Effective Interpersonal and Team Communication Skills for Engineers*, 2013, John Wiley & Sons, Inc., Hoboken: New Jersey.
3. ArunPatil, Henk Eijkman &Ena Bhattacharya, *New Media Communication Skills for Engineers and IT*

| | |
|---|---|
| 4. | *Professionals*,2012, IGI Global, Hershey PA. |
| 5. | Judi Brownell, *Listening: Attitudes, Principles and Skills*, 2016, 5th Edition, Routledge:USA |
| 6. | John Langan, Ten Steps to Improving College Reading Skills, 2014, 6th Edition, Townsend Press:USA<br>Redston, Chris, Theresa Clementson, and Gillie Cunningham. *Face2face Upper Intermediate Teacher's Book*. 2013, Cambridge University Press. |

Mode of Evaluation: CAT / Assignment / Quiz / FAT / Project / Seminar

**List of Challenging Experiments (Indicative)**

| | | |
|---|---|---|
| 1. | Familiarizing students to adjectives through brainstorming adjectives with all letters of the English alphabet and asking them to add an adjective that starts with the first letter of their name as a prefix. | 2 hours |
| 2. | Making students identify their peer who lack Pace, Clarity and Volume during presentation and respond using Symbols. | 4 hours |
| 3. | Using Picture as a tool to enhance learners speaking and writing skills | 2 hours |
| 4. | Using Music and Songs as tools to enhance pronunciation in the target language / Activities through VIT Community Radio | 2 hours |
| 5. | Making students upload their Self- introduction videos in Vimeo.com | 4 hours |
| 6. | Brainstorming idiomatic expressions and making them use those in to their writings and day to day conversation | 4 hours |
| 7. | Making students Narrate events by adding more descriptive adjectives and add flavor to their language / Activities through VIT Community Radio | 4 hours |
| 8 | Identifying the root cause of stage fear in learners and providing remedies to make their presentation better | 4 hours |
| 9 | Identifying common Spelling & Sentence errors in Letter Writing and other day to day conversations | 2 hours |
| 10. | Discussing FAQ's in interviews with answers so that the learner gets a better insight in to interviews / Activities through VIT Community Radio | 2 hours |
| Total Practical Hours | | 30 hours |

| | | | |
|---|---|---|---|
| Recommended by Board of Studies | 22-07-2017 | | |
| Approved by Academic Council | No. 46 | Date | 24-8-2017 |

| Course code | Professional and Communication Skills | L | T | P | J | C |
|---|---|---|---|---|---|---|
| ENG5002 | | 0 | 0 | 2 | 0 | 1 |
| Pre-requisite | ENG5001 | Syllabus version | | | | |
| | | v. 1.1 | | | | |

**Course Objectives:**

1. To enable students to develop effective Language and Communication Skills
2. To enhance students' Personal and Professional skills
3. To equip the students to create an active digital footprint

**Expected Course Outcome:**

1. Improve inter-personal communication skills
2. Develop problem solving and negotiation skills
3. Learn the styles and mechanics of writing research reports
4. Cultivate better public speaking and presentation skills
5. Apply the acquired skills and excel in a professional environment

| | | |
|---|---|---|
| **Module:1** | **Personal Interaction** | **2hours** |
| Introducing Oneself- one's career goals<br>Activity: SWOT Analysis | | |
| **Module:2** | **Interpersonal Interaction** | **2 hours** |
| Interpersonal Communication with the team leader and colleagues at the workplace<br>Activity: Role Plays/Mime/Skit | | |
| **Module:3** | **Social Interaction** | **2 hours** |
| Use of Social Media, Social Networking, gender challenges<br>Activity: Creating LinkedIn profile, blogs | | |
| **Module:4** | **Résumé Writing** | **4 hours** |
| Identifying job requirement and key skills<br>Activity: Prepare an Electronic Résumé | | |
| **Module:5** | **Interview Skills** | **4 hours** |
| Placement/Job Interview, Group Discussions<br>Activity: Mock Interview and mock group discussion | | |
| **Module:6** | **Report Writing** | **4 hours** |
| Language and Mechanics of Writing<br>Activity: Writing a Report | | |
| **Module:7** | **Study Skills: Note making** | **2hours** |
| Summarizing the report<br>Activity: Abstract, Executive Summary, Synopsis | | |
| **Module:8** | **Interpreting skills** | **2 hours** |
| Interpret data in tables and graphs<br>Activity: Transcoding | | |
| **Module:9** | **Presentation Skills** | **4 hours** |
| Oral Presentation using Digital Tools<br>Activity: Oral presentation on the given topic using appropriate non-verbal cues | | |
| **Module:10** | **Problem Solving Skills** | **4 hours** |
| Problem Solving & Conflict Resolution<br>Activity: Case Analysis of a Challenging Scenario | | |

| | | | |
|---|---|---|---|
| | **Total Lecture hours:** | **30 hours** | |

**Text Book(s)**

| | |
|---|---|
| 1. | Bhatnagar Nitin and Mamta Bhatnagar, *Communicative English For Engineers And Professionals*, 2010, Dorling Kindersley (India) Pvt. Ltd. |

**Reference Books**

| | |
|---|---|
| | Jon Kirkman and Christopher Turk, *Effective Writing: Improving Scientific, Technical and Business Communication*, 2015, Routledge.<br>Diana Bairaktarova and Michele Eodice, *Creative Ways of Knowing in Engineering*, 2017, Springer International Publishing.<br>Clifford A Whitcomb & Leslie E Whitcomb, *Effective Interpersonal and Team Communication Skills for Engineers*, 2013, John Wiley & Sons, Inc., Hoboken: New Jersey.<br>ArunPatil, Henk Eijkman &Ena Bhattacharya, *New Media Communication Skills for Engineers and IT Professionals*,2012, IGI Global, Hershey PA. |
| | Authors, book title, year of publication, edition number, press, place |

Mode of Evaluation: CAT / Assignment / Quiz / FAT / Project / Seminar

**List of Challenging Experiments (Indicative)**

| | | |
|---|---|---|
| 1. | SWOT Analysis – Focus specially on describing two strengths and two weaknesses | 2 hours |
| 2. | Role Plays/Mime/Skit -- Workplace Situations | 4 hours |
| 3. | Use of Social Media – Create a LinkedIn Profile and also write a page or two on areas of interest | 2 hours |
| 4. | Prepare an Electronic Résumé and upload the same in vimeo | 2 hours |
| 5. | Group discussion on latest topics | 4 hours |
| 6 | Report Writing – Real-time reports | 2 hours |
| 7 | Writing an Abstract, Executive Summary on short scientific or research articles | 4 hours |
| 8 | Transcoding – Interpret the given graph, chart or diagram | 2 hours |
| 9 | Oral presentation on the given topic using appropriate non-verbal cues | 4 hours |
| 10 | Problem Solving -- Case Analysis of a Challenging Scenario | 4 hours |
| Total Laboratory Hours | | 30 hours |

| | | | |
|---|---|---|---|
| Recommended by Board of Studies | 22-07-2017 | | |
| Approved by Academic Council | No. 47 | Date | 05-10-2017 |

| Course code | PROFESSIONAL AND COMMUNICATION SKILLS | L | T | P | J | C |
|---|---|---|---|---|---|---|
| ENG5002 | | 0 | 0 | 2 | 0 | 1 |
| Pre-requisite | ENG5001 | Syllabus version | | | | |
| | | v.2.20 | | | | |

**Course Objectives:**

1. To enable students develop effective Language and Communication Skills
2. To enhance students' Personal and Professional skills

**Expected Course Outcome:**

1. Students will be able to apply the acquired skills and excel in a professional environment.

| Module:1 | Personal Interaction | 2 hours |
|---|---|---|
| Introducing Oneself- one's career goals<br>Activity: SWOT Analysis | | |
| **Module:2** | **Interpersonal Interaction** | **2 hours** |
| Interpersonal Communication with the team leader and colleagues at the workplace<br>Activity: Role Plays/Mime/Skit | | |
| **Module:3** | **Social Interaction** | **2 hours** |
| Use of Social Media, Social Networking, gender challenges<br>Activity: Creating LinkedIn profile, blogs | | |
| **Module:4** | **Résumé Writing** | **4 hours** |
| Identifying job requirement and key skills ; Activity: Prepare an Electronic Résumé | | |
| **Module:5** | **Interview Skills** | **4 hours** |
| Placement/Job Interview, Group Discussions; Activity: Mock Interview and mock group discussion | | |
| **Module:6** | **Report Writing** | **4 hours** |
| Language and Mechanics of Writing<br>Activity: Writing a Report | | |
| **Module:7** | **Study Skills: Note making** | **2 hours** |
| Summarizing the report; Activity: Abstract, Executive Summary, Synopsis | | |
| **Module:8** | **Interpreting skills** | **2 hours** |
| Interpret data in tables and graphs<br>Activity: Transcoding | | |
| **Module:9** | **Presentation Skills** | **2 hours** |
| Oral Presentation using Digital Tools<br>Activity: Oral presentation on the given topic using appropriate non-verbal cues | | |
| **Module:10** | **Problem Solving Skills** | **4 hours** |

| | | | |
|---|---|---|---|
| Problem Solving & Conflict Resolution<br>Activity: Case Analysis of a Challenging Scenario | | | |
| | **Total Lecture hours:** | **30 hours** | |

**Text Book(s)**

| | |
|---|---|
| 1. | Bhatnagar Nitin and Mamta Bhatnagar, *Communicative English For Engineers And Professionals*, 2010, Dorling Kindersley (India) Pvt. Ltd. |

**Reference Books**

| | |
|---|---|
| 1. | Clifford A Whitcomb & Leslie E Whitcomb, *Effective Interpersonal and Team Communication Skills for Engineers*, 2013, John Wiley & Sons, Inc., Hoboken: New Jersey. |
| 2. | Arun Patil, Henk Eijkman & Ena Bhattacharya, *New Media Communication Skills for Engineers and IT Professionals*,2012, IGI Global, Hershey PA. |
| 3. | John Adair, *Decision Making and Problem Solving Strategies*,2010, Replika Press, New Delhi. |
| 4. | Jon Kirkman and Christopher Turk, *Effective Writing: Improving Scientific, Technical and Business Communication*, 2015, Routledge |
| 5. | Diana Bairaktarova and Michele Eodice, *Creative Ways of Knowing in Engineering*, 2017, Springer International Publishing |

Mode of Evaluation: CAT / Assignment / Quiz / FAT / Project / Seminar

| **List of Challenging Experiments (Indicative)** | | |
|---|---|---|
| 1. | SWOT Analysis – Focus specially on describing two strengths and two weaknesses | 2 hours |
| 2. | Role Plays/Mime/Skit -- Workplace Situations | 4 hours |
| 3. | Use of Social Media – Create a LinkedIn Profile and also write a page or two on areas of interest | 2 hours |
| 4. | Prepare an Electronic Résumé and upload the same in vimeo | 2 hours |
| 5. | Group discussion on latest topics | 4 hours |
| 6. | Report Writing – Real-time reports | 2 hours |
| 7. | Writing an Abstract, Executive Summary on short scientific or research articles | 4 hours |
| 8 | Transcoding – Interpret the given graph, chart or diagram | 2 hours |
| 9 | Oral presentation on the given topic using appropriate non-verbal cues | 4 hours |
| 10. | Problem Solving -- Case Analysis of a Challenging Scenario | 4 hours |
| Total Laboratory Hours | | 30 hours |

| | | | |
|---|---|---|---|
| Recommended by Board of Studies | 22-07-2017 | | |
| Approved by Academic Council | No. 46 | Date | 24-08-2017 |

| FRE1001 | FRANÇAIS QUOTIDIEN | L | T | P | J | C |
|---|---|---|---|---|---|---|
| | | 2 | 0 | 0 | 0 | 2 |
| **Pre-requisite** | **NIL** | **Syllabus version** | | | | |
| | | 1.0 | | | | |

**Course Objectives:**

The course gives students the necessary background to:

1. Learn the basics of French language and to communicate effectively in French in their day to day life.
2. Achieve functional proficiency in listening, speaking, reading and writing
3. Recognize culture-specific perspectives and values embedded in French language.

**Expected Course Outcome:**

**The students will be able to :**

1. **Identify in French language the daily life communicative situations via personal pronouns, emphatic pronouns, salutations, negations and interrogations.**
2. Communicate effectively in French language via regular / irregular verbs.
3. Demonstrate comprehension of the spoken / written language in translating simple sentences.
4. Understand and demonstrate the comprehension of some particular new range of unseen written materials
5. Demonstrate a clear understanding of the French culture through the language studied

| **Module: 1** | **Expressions simples** | **3 hours** |
|---|---|---|

Les Salutations, Les nombres (1-100), Les jours de la semaine, Les mois de l'année, Les Pronoms Sujets, Les Pronoms Toniques, La conjugaison des verbes irréguliers- avoir / être / aller / venir / faire etc.

Savoir-faire pour:Saluer, Se présenter, Présenter quelqu'un, Etablir des contacts

| **Module: 2** | **La conjugaison des verbes réguliers** | **3 hours** |
|---|---|---|

La conjugaison des verbes réguliers, La conjugaison des verbes pronominaux, La Négation, L'interrogation avec 'Est-ce que ou sans Est-ce que'.

Savoir-faire pour:

Chercher un(e) correspondant(e), Demander des nouvelles d'une personne.

| **Module: 3** | **La Nationalité du Pays, L'article (défini/ indéfini), Les prépositions** | **6 hours** |
|---|---|---|

La Nationalité du Pays, L'article (défini/ indéfini), Les prépositions (à/en/au/aux/sur/dans/avec etc.), L'article contracté, Les heures en français, L'adjectif (La Couleur, L'adjectif possessif, L'adjectif démonstratif/ L'adjectif interrogatif (quel/quelles/quelle/quelles), L'accord des adjectifs avec le nom, L'interrogation avec Comment/ Combien / Où etc.

Savoir-faire pour:

Poser des questions, Dire la date et les heures en français,

| **Module: 4** | **La traduction simple** | **4 hours** |
|---|---|---|

La traduction simple :(français-anglais / anglais –français),

Savoir-faire pour :

Faire des achats, Comprendre un texte court, Demander et indiquer le chemin.

| **Module: 5** | **L'article Partitif, Mettez les phrases aux pluriels** | **5 hours** |
|---|---|---|

L'article Partitif, Mettez les phrases aux pluriels, Faites une phrase avec les mots donnés, Trouvez les questions.

Savoir-faire pour :

| | | |
|---|---|---|
| Répondez aux questions générales en français, Exprimez les phrases données au Masculin ou au Féminin, Associez les phrases. | | |
| **Module: 6** | **Décrivez :** | **3 hours** |
| Décrivez: La Famille / La Maison / L'université / Les Loisirs / La Vie quotidienne etc. | | |
| **Module: 7** | Dialogue | **4 hours** |
| Dialogue:<br>1. Décrire une personne.<br>2. Des conversations à la cafeteria.<br>3. Des conversations avec les membres de la famille<br>4. Des dialogues entre les amis. | | |
| **Module: 8** | **Guest lecures** | **2 hours** |
| Guest lectures / Natives speakers | | |
| **Total Lecture hours** | | **30 hours** |

| | |
|---|---|
| **Text Book(s)** | |
| 1. | Fréquence jeunes-1, Méthode de français, G. Capelle et N.Gidon, Hachette, Paris, 2010. |
| 2. | Fréquence jeunes-1, Cahier d'exercices, G. Capelle et N.Gidon, Hachette, Paris, 2010. |
| **Reference Books** | |
| 1. | CONNEXIONS 1, Méthode de français, Régine Mérieux, Yves Loiseau,Les Éditions Didier, 2010. |
| 2. | CONNEXIONS 1, Le cahier d'exercices, Régine Mérieux, Yves Loiseau, Les Éditions Didier, 2010 |
| 3. | ALTER EGO 1, Méthode de français, Annie Berthet, Catherine Hugo, Véronique M. Kizirian, Béatrix Sampsonis, Monique Waendendries, Hachette livre Paris 2011 |
| 4. | ALTER EGO 1, Le cahier d'activités, Annie Berthet, Catherine Hugo, Béatrix Sampsonis, Monique Waendendries, Hachette livre, Paris 2011 |

| | | | |
|---|---|---|---|
| **Mode of Evaluation:** CAT / Assignment / Quiz / Seminar / FAT | | | |
| **Recommended by Board of Studies** | 26.02.2016 | | |
| **Approved by Academic Council** | 41st ACM | **Date** | 17.06.2016 |

| Course code | DESIGN MANAGEMENT AND PROFESSIONAL PRACTICE | L | T | P | J | C |
|---|---|---|---|---|---|---|
| MDE6013 | | 2 | 0 | 0 | 0 | 2 |
| Pre-requisite | | Syllabus version | | | | |
| | | v. 1.20 | | | | |

**Course Objectives:**

Develop management skills enabling them to engage in innovative projects based on design as a strategic asset.

**Expected Course Outcome:**

The students will have,

1. Ability to demonstrate a high degree of professionalism characterized by initiative and creativity.
2. Express ideas effectively and communicate information appropriately and accurately using a range of media including ICT.
3. Develop working relationships using teamwork and leadership skills
4. Critically reflect on experience of significant managerial responsibility on setting up a design firm.

| | | |
|---|---|---|
| **Module:1** | | **4 hours** |
| Designer attributes. | | |
| **Module:2** | | **4 hours** |
| Setting up a design office. Finding clients. | | |
| **Module:3** | | **4 hours** |
| Business correspondence. Brief and briefing. Letter of contract. | | |
| **Module:4** | | **4 hours** |
| Professionalism and ethics. Costing design and fee estimation. | | |
| **Module:5** | | **4 hours** |
| Management of design Process, Human factor in managing design / team work. | | |
| **Module:6** | | **4 hours** |
| Design as a Management tool. Design evaluation. | | |
| **Module:7** | | **4 hours** |
| Patent and design registration laws / procedure. | | |
| **Module:8** | **Contemporary issues:** | **2 hours** |
| Contemporary discussion with the artists and designers. | | |
| | **Total Lecture hours:** | **30 hours** |

| | |
|---|---|
| **Text Book(s)** | |
| 1. | Brustein David and Frank Stasiowski, 'Project Management for the Design Professional', Whitney Library of Design, New York, 1982 |
| **Reference Books** | |
| 1. | Oakley, Mark (Ed.), 'Design Management – A Handbook of Issues and Methods', Basil Blackwell Ltd., 1990. |
| | Case studies by Design Management Institute, USA. |
| Mode of Evaluation: CAT / Assignment / Quiz / FAT / Project / Seminar | |

| | | | |
|---|---|---|---|
| Recommended by Board of Studies | 17-08-2017 | | |
| Approved by Academic Council | No. 47 | Date | 05-10-2017 |

| GER1001 | GRUNDSTUFE DEUTSCH | L | T | P | J | C |
|---|---|---|---|---|---|---|
| | | 2 | 0 | 0 | 0 | 2 |
| **Pre-requisite** | **Nil** | **Syllabus version** | | | | |
| | | 1.0 | | | | |

**Course Objectives:**

The course gives students the necessary background to:

1. Demonstrate Proficiency in reading, writing, and speaking in basic German. Learning vocabulary related to profession, education centres, day-to-day activities, food, culture, sports and hobby, family set up, workplace, market and classroom activities are essential.
2. Make the students industry oriented and make them adapt in the German culture.

**Expected Course Outcome:**

The students will be able to

1. Remember greeting people, introducing oneself and understanding basic expressions in German.
2. Understand basic grammar skills to use these in a meaning way.
3. Remember beginner's level vocabulary
4. Create sentences in German on a variety of topics with significant precision and in detail.
5. Apply good comprehension of written discourse in areas of special interests.

| **Module: 1** | | **3 hours** |
|---|---|---|

Begrüssung, Landeskunde, Alphabet, Personalpronomen, Verben- heissen, kommen, wohnen, lernen, Zahlen (1-100), W-Fragen, Aussagesätze, Nomen- Singular und Plural, der Artikel -Bestimmter- Unbestimmter Artikel)

**Lernziel :**

Sich vorstellen, Grundlegendes Verständnis von Deutsch, Deutschland in Europa

| **Module: 2** | | **3 hours** |
|---|---|---|

Konjugation der Verben (regelmässig /unregelmässig),das Jahr- Monate, Jahreszeiten und die Woche, Hobbys, Berufe, Artikel, Zahlen (Hundert bis eine Million), Ja-/Nein- Frage, Imperativ mit „Sie'' Lernziel:

Sätze schreiben, über Hobbys, Berufe erzählen, usw

| **Module: 3** | | **5 hours** |
|---|---|---|

Possessivpronomen, Negation, Kasus (Bestimmter- Unbestimmter Artikel) Trennbareverben, Modalverben, Uhrzeit, Präpositionen, Lebensmittel, Getränkeund Essen, Farben, Tiere

**Lernziel :**

Sätze mit Modalverben, Verwendung von Artikel, Adjektiv beim Verb

| **Module: 4** | | **5 hours** |
|---|---|---|

Übersetzung: (Deutsch – Englisch / Englisch – Deutsch)

**Lernziel :**

Die Übung von Grammatik und Wortschatz

| **Module: 5** | | **5 hours** |
|---|---|---|

Leserverständnis. Mindmap machen, Korrespondenz- Briefe und Email

**Lernziel:**

| | | |
|---|---|---|
| Übung der Sprache, Wortschatzbildung | | |
| **Module: 6** | | **3 hours** |
| **Aufsätze :**Die Familie, Bundesländer in Deutschland, Ein Fest in Deutschland,<br>**Lernziel :**<br>Aktiver, selbständiger Gebrauch der Sprache | | |
| **Module: 7** | | **4 hours** |
| Dialoge:<br>a) Gespräche mit einem/einer Freund /Freundin.<br>b) Gespräche beim Einkaufen ; in einem Supermarkt ; in einer Buchhandlung ;<br>c) in einem Hotel - an der Rezeption ; ein Termin beim Arzt.<br>d) Ein Telefongespräch ; Einladung–Abendessen | | |
| **Module: 8** | | **2 hours** |
| Guest Lectures / Native Speakers Einleitung in die deustche Kultur und Politik | | |
| **Total Lecture hours** | | **30 hours** |

| | |
|---|---|
| **Text Book(s)** | |
| 1. | Netzwerk Deutsch als Fremdsprache A1, Stefanie Dengler, Paul Rusch, Helen Schmtiz, Tanja Sieber, Klett-Langenscheidt Verlag, München : 2013 |
| **Reference Books** | |
| 1. | Lagune, Hartmut Aufderstrasse, Jutta Müller, Thomas Storz, 2012. |
| 2. | Deutsche Sprachlehre für Ausländer, Heinz Griesbach, Dora Schulz, 2013 |
| 3. | Studio d A1, Hermann Funk, Christina Kuhn, CorneslenVerlag, Berlin: 2010 |
| 4. | Tangram Aktuell-I, Maria-Rosa, SchoenherrTil, Max Hueber Verlag, Muenchen: 2012 |
| | www.goethe.de<br>wirtschaftsdeutsch.de<br>hueber.de<br>klett-sprachen.de<br>www.deutschtraning.org |

| | | | |
|---|---|---|---|
| **Mode of Evaluation:** CAT / Assignment / Quiz / Seminar / FAT | | | |
| **Recommended by Board of Studies** | 04.03.2016 | | |
| **Approved by Academic Council** | 41st ACM | **Date** | 17.06.2016 |

| Course code | SET – I | L | T | P | J | C |
|---|---|---|---|---|---|---|
| SET5001 | | x | x | x | x | x |
| Pre-requisite | | Syllabus version | | | | |
| | | 1.10 | | | | |

**Course Objectives:**

The Objectives of the course are:

1. SET project may be of theoretical analysis, modeling & simulation, experimentation & analysis, prototype design, fabrication of new equipment, correlation and analysis of data, software development, etc. or a combination of these.
2. The SET project is intended to give each student the fundamental research concept. The projects will explore innovations in technology, systems and business strategy.
3. It improves the research culture and gives confidence for the student to practice and write individual research article in the form of national and international conferences and journal papers.
4. A consciousness of the ethical aspects of research and development work needed for societal improvement
5. SET project is carried along with other academic courses in the institute as a part of academic curriculum

**Expected Course Outcome:**

On completion of this course student should be able to:

1. Carried out inside the university, in any research area corresponding to their curriculum
2. Publications in the peer reviewed journals / International Conferences will be an added advantage.
3. It motivates and encourage research culture in the young minds of graduate engineers
4. Students are made aware of plagiarism checking and they are advised not to exceed more than 12% as per the academic regulations.

Mode of assessment:

| | | | |
|---|---|---|---|
| Recommended by Board of Studies | 17-08-2017 | | |
| Approved by Academic Council | No. 47 | Date | 05-10-2017 |

| Course code | SET – II | L | T | P | J | C |
|---|---|---|---|---|---|---|
| SET5002 | | x | x | x | x | x |
| Pre-requisite | | Syllabus version | | | | |
| | | 1.10 | | | | |

**Course Objectives:**

The Objectives of the course are:

1. SET project may be of theoretical analysis, modeling & simulation, experimentation & analysis, prototype design, fabrication of new equipment, correlation and analysis of data, software development, etc. or a combination of these.
2. The SET project is intended to give each student the fundamental research concept. The projects will explore innovations in technology, systems and business strategy.
3. It improves the research culture and gives confidence for the student to practice and write individual research article in the form of national and international conferences and journal papers.
4. A consciousness of the ethical aspects of research and development work needed for societal improvement
5. SET project is carried along with other academic courses in the institute as a part of academic curriculum

**Expected Course Outcome:**

On completion of this course student should be able to:

1. Carried out inside the university, in any research area corresponding to their curriculum
2. Publications in the peer reviewed journals / International Conferences will be an added advantage.
3. It motivates and encourage research culture in the young minds of graduate engineers
4. Students are made aware of plagiarism checking and they are advised not to exceed more than 12% as per the academic regulations.

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Mode of Evaluation: CAT / Assignment / Quiz / FAT / Project / Seminar

| | | | |
|---|---|---|---|
| Recommended by Board of Studies | 17-08-2017 | | |
| Approved by Academic Council | No. 47 | Date | 05-10-2017 |

| Course code | Essentials of Business Etiquette and problem solving | L | T | P | J | C |
|---|---|---|---|---|---|---|
| STS5001 | | 3 | 0 | 0 | 0 | 1 |
| Pre-requisite | | Syllabus version | | | | |
| | | | | | | |

**Course Objectives:**

1. To develop the students' logical thinking skills
2. To learn the strategies of solving quantitative ability problems
3. To enrich the verbal ability of the students
4. To enhance critical thinking and innovative skills

**Expected Course Outcome:**

1. Enabling students to use relevant aptitude and appropriate language to express themselves
2. To communicate the message to the target audience clearly
3. The students will be able to be proficient in solving quantitative aptitude and verbal ability questions of various examinations effortlessly

| Module:1 | Business Etiquette: Social and Cultural Etiquette and Writing Company Blogs and Internal Communications and Planning and Writing press release and meeting notes | 9 hours |
|---|---|---|

Value, Manners, Customs, Language, Tradition, Building a blog, Developing brand message, FAQs', Assessing Competition, Open and objective Communication, Two way dialogue, Understanding the audience, Identifying, Gathering Information, Analysis, Determining, selecting plan, Progress check, Types of planning, Write a short, catchy headline, Get to the Point –summarize your subject in the first paragraph., Body – Make it relevant to your audience,

| Module:2 | Study skills – Time management skills | 3 hours |
|---|---|---|

Prioritization, Procrastination, Scheduling, Multitasking, Monitoring, working under pressure and adhering to deadlines

| Module:3 | Presentation skills – Preparing presentation and Organizing materials and Maintaining and preparing visual aids and Dealing with questions | 7 hours |
|---|---|---|

10 Tips to prepare PowerPoint presentation, Outlining the content, Passing the Elevator Test, Blue sky thinking, Introduction , body and conclusion, Use of Font, Use of Color, Strategic presentation, Importance and types of visual aids, Animation to captivate your audience, Design of posters, Setting out the ground rules, Dealing with interruptions, Staying in control of the questions, Handling difficult questions

| Module:4 | Quantitative Ability -L1 – Number properties and Averages and Progressions and Percentages and Ratios | 11 hours |
|---|---|---|

Number of factors, Factorials, Remainder Theorem, Unit digit position, Tens digit position, Averages, Weighted Average, Arithmetic Progression, Geometric Progression, Harmonic Progression, Increase & Decrease or successive increase, Types of ratios and proportions

| Module:5 | Reasoning Ability-L1 – Analytical Reasoning | 8 hours |
|---|---|---|

Data Arrangement (Linear and circular & Cross Variable Relationship), Blood Relations, Ordering/ranking/grouping, Puzzle test, Selection Decision table

| Module:6 | Verbal Ability-L1 – Vocabulary Building | 7 hours |
|---|---|---|

Synonyms & Antonyms, One-word substitutes, Word Pairs, Spellings, Idioms, Sentence completion, Analogies

| | | | |
|---|---|---|---|
| | **Total Lecture hours:** | **45 hours** | |

| | |
|---|---|
| **Reference Books** | |
| 1. | Kerry Patterson, Joseph Grenny, Ron McMillan, Al Switzler (2001) Crucial Conversations: Tools for Talking When Stakes are High. Bangalore. McGraw-Hill Contemporary |
| 2. | Dale Carnegie, (1936) How to Win Friends and Influence People. New York. Gallery Books |
| 3. | Scott Peck. M (1978) Road Less Travelled. New York City. M. Scott Peck. |
| 4. | FACE (2016) Aptipedia Aptitude Encyclopedia. Delhi. Wiley publications |
| 5. | ETHNUS (2013) Aptimithra. Bangalore. McGraw-Hill Education Pvt. Ltd. |
| **Websites:** | |
| 1. | **www.chalkstreet.com** |
| 2. | **www.skillsyouneed.com** |
| 3. | **www.mindtools.com** |
| 4. | **www.thebalance.com** |
| 5. | **www.eguru.ooo** |

**Mode of Evaluation**: FAT, Assignments, Projects, Case studies, Role plays,
3 Assessments with Term End FAT (Computer Based Test)

| STS5002 | Preparing for Industry | L | T | P | J | C |
|---|---|---|---|---|---|---|
| | | 3 | 0 | 0 | 0 | 1 |
| **Pre-requisite** | | **Syllabus version** | | | | |
| | | 2.0 | | | | |

**Course Objectives:**

1. To develop the students' logical thinking skills
2. To learn the strategies of solving quantitative ability problems
3. To enrich the verbal ability of the students
4. To enhance critical thinking and innovative skills

**Expected Course Outcome:**

1. Enabling students to simplify, evaluate, analyze and use functions and expressions to simulate real situations to be industry ready.

| | | |
|---|---|---|
| **Module:1** | **Interview skills – Types of interview and Techniques to face remote interviews and Mock Interview** | **3 hours** |

Structured and unstructured interview orientation, Closed questions and hypothetical questions, Interviewers' perspective, Questions to ask/not ask during an interview, Video interview¸ Recorded feedback, Phone interview preparation, Tips to customize preparation for personal interview, Practice rounds

| | | |
|---|---|---|
| **Module:2** | **Resume skills – Resume Template and Use of power verbs and Types of resume and Customizing resume** | **2 hours** |

Structure of a standard resume, Content, color, font, Introduction to Power verbs and Write up, Quiz on types of resume, Frequent mistakes in customizing resume, Layout - Understanding different company's requirement, Digitizing career portfolio

| | | |
|---|---|---|
| **Module:3** | **Emotional Intelligence - L1 – Transactional Analysis and Brain storming and Psychometric Analysis and Rebus Puzzles/Problem Solving** | **12 hours** |

Introduction, Contracting, ego states, Life positions, Individual Brainstorming, Group Brainstorming, Stepladder Technique, Brain writing, Crawford's Slip writing approach, Reverse brainstorming, Star bursting, Charlette procedure, Round robin brainstorming, Skill Test, Personality Test, More than one answer, Unique ways

| | | |
|---|---|---|
| **Module:4** | **Quantitative Ability-L3 – Permutation-Combinations and Probability and Geometry and mensuration and Trigonometry and Logarithms and Functions and Quadratic Equations and Set Theory** | **14 hours** |

| | | |
|---|---|---|
| Counting, Grouping, Linear Arrangement, Circular Arrangements, Conditional Probability, Independent and Dependent Events, Properties of Polygon, 2D & 3D Figures, Area & Volumes, Heights and distances, Simple trigonometric functions, Introduction to logarithms, Basic rules of logarithms, Introduction to functions, Basic rules of functions, Understanding Quadratic Equations, Rules & probabilities of Quadratic Equations, Basic concepts of Venn Diagram | | |
| | | |
| **Module:5** | **Reasoning ability-L3 – Logical reasoning and Data Analysis and Interpretation** | **7 hours** |
| Syllogisms, Binary logic, Sequential output tracing, Crypto arithmetic, Data Sufficiency, Data interpretation-Advanced, Interpretation tables, pie charts & bar chats | | |
| | | |
| **Module:6** | **Verbal Ability-L3 – Comprehension and Logic** | **7 hours** |
| Reading comprehension, Para Jumbles, Critical Reasoning (a) Premise and Conclusion, (b) Assumption & Inference, (c) Strengthening & Weakening an Argument | | |
| | | |
| | | |
| | **Total Lecture hours:** | **45 hours** |

**Reference Books**

| | |
|---|---|
| 1. | Michael Farra and JIST Editors(2011) Quick Resume & Cover Letter Book: Write and Use an Effective Resume in Just One Day. Saint Paul, Minnesota. Jist Works |
| 2. | Daniel Flage Ph.D(2003) The Art of Questioning: An Introduction to Critical Thinking. London. Pearson |
| 3. | David Allen( 2002) Getting Things done : The Art of Stress -Free productivity. New York City. Penguin Books. |
| 4. | FACE(2016) Aptipedia Aptitude Encyclopedia.Delhi. Wiley publications |
| 5. | ETHNUS(2013) Aptimithra. Bangalore. McGraw-Hill Education Pvt. Ltd. |

**Websites:**

| | |
|---|---|
| 1. | **www.chalkstreet.com** |
| 2. | **www.skillsyouneed.com** |
| 3. | **www.mindtools.com** |
| 4. | **www.thebalance.com** |
| 5. | **www.eguru.ooo** |

**Mode of Evaluation**: FAT, Assignments, Projects, Case studies, Role plays,
3 Assessments with Term End FAT (Computer Based Test)

| | | | |
|---|---|---|---|
| Recommended by Board of Studies | 09/06/2017 | | |
| Approved by Academic Council | No. 45th AC | Date | 15/06/2017 |

| Course code | MASTERS THESIS | L | T | P | J | C |
|---|---|---|---|---|---|---|
| MDE 6099 | | | | | | 12 |
| Pre-requisite | | Syllabus version | | | | |
| | | 1.20 | | | | |

**Course Objectives:**

1. Master's Thesis may be of conducting user study, market analysis, technical analysis, theoretical analysis, modeling & simulation, experimentation & analysis, concept design and development, prototype design, new product development, correlation and analysis of data, user interface design, software development, etc. or a combination of these.
2. The thesis is intended to give each student experience in a manufacturing industry, working on problems with both strategic breadth and technical depth. It is an integrating experience to help pull together the diverse topics treated in class. The projects will explore innovations in products, technology, systems and business strategy.
3. The capability to use a holistic view to critically, independently and creatively identify, formulate and deal with complex issues.
4. The capability to problem-solving through plan and use adequate methods to conduct qualified tasks in given frameworks and to evaluate this work.
5. The capability to conceptualize new product design solutions through explorations in form and colour.
6. The capability to simulate and express design concepts through physical and digital medium.
7. The capability to create, analyze and critically evaluate different technical and feasible solutions.
8. The capability to critically and systematically integrate knowledge.
9. The capability to clearly present and discuss the conclusions as well as the knowledge and arguments that form the basis for these findings in written and spoken English.
10. The capability to identify the issues that must be addressed within the framework of the specific thesis in order to take into consideration all relevant dimensions of sustainable development.

**Expected Course Outcome:**

1. Considerably more in-depth knowledge of the major subject/field of study, including deeper insight into current research and development work.
2. The capability to use a holistic view to critically, independently and creatively identify, formulate and deal with complex product design issues.
3. A consciousness of the ethical, social, and cultural aspects of research and development work.

- Project can be for a period of 6 months based on the completion of course projects and required number of credits as per the academic regulations.
- Must be an individual work
- Carried out inside or outside the university, in any relevant industry or research institution.
- Design Registration and/or Design Patent of the work done during project period will be an added value
- Publications in the peer reviewed Journals / International Conferences will be an added value.
- Plagiarism checking by Turnitin is compulsory part of master's thesis. Plagiarism level should not exceed more than 12% as per the academic regulations

| | | |
|---|---|---|
| **Module:1** | | **6 hours** |
| **Module:2** | | **6 hours** |
| **Module:3** | | **6 hours** |
| **Module:4** | | **6 hours** |

| | | |
|---|---|---|
| **Module:5** | | **6 hours** |
| **Module:6** | | **6 hours** |
| **Module:7** | | **6 hours** |
| **Module:8** | **Contemporary issues:** | **6 hours** |

Mode of Evaluation: CAT / Assignment / Quiz / FAT / Project / Seminar

| | | | |
|---|---|---|---|
| Recommended by Board of Studies | 17-08-2017 | | |
| Approved by Academic Council | No. 47 | Date | 05-10-2017 |

VIT
Vellore Institute of Technology
(Deemed to be University under section 3 of UGC Act, 1956)

## SYLLABUS FOR

## PROGRAM CORE

## COURSES

| Course code | FORM AND COLOUR STUDIES | L | T | P | J | C |
|---|---|---|---|---|---|---|
| MDE5001 | | 0 | 0 | 4 | 4 | 3 |

| Pre-requisite | | Syllabus version |
|---|---|---|
| | | v. 1.0 |

**Course Objectives:**

1. Make students learn the elements and principles of product design.
2. Make students learn the perception theory, and product aesthetics

**Expected Course Outcome:**

The students will have,

1. Understand the basic elements and principles of form.
2. Capability to create abstract forms.
3. Ability to create complex forms in different mediums.
4. Understanding the importance of textures in a form.
5. Understanding the importance of color in a form.
6. Generate forms using metaphors..

| | | |
|---|---|---|
| **Module:1** | | **6 hours** |
| Proportions, structure, volume and shading techniques. Exercises on Gestalt laws, composition and figure & ground relationships | | |
| **Module:2** | | **8 hours** |
| Introduction to 2 dimensional and 3 dimensional forms. 2D and 3D form transition. | | |
| **Module:3** | | **8 hours** |
| Capturing the human and animal form. Study of abstraction in art and sculpture. Exercises on product expressions using abstract forms. | | |
| **Module:4** | | **8 hours** |
| Use of combinations as a method of 3d form generation. Radii manipulation in 2d and 3d form. | | |
| **Module:5** | | **6 hours** |
| Exploration of surface textures in different materials. | | |
| **Module:6** | | **10 hours** |
| Exercises in Colour - emotions of colour, colour-wheel, and colour selection | | |
| **Module:7** | | **10 hours** |
| Use of metaphors to generate new forms. Form, material and process relationship. | | |
| **Module:8** | **Contemporary issues:** | **4 hours** |
| Contemporary discussion with the artists and designers. | | |
| | **Total Lecture hours:** | **60 hours** |

**Text Book(s)**


1. Ocvirk, O.G., Stinson, R.E., Wigg, P.R., Bone, R.O., and Cayton, D.L. (2002). *Art Fundamentals: Theory and Practice*, McGraw-Hill, USA.


**Reference Books**


1. Itten, Johannes; The Art of Color: The Subjective Experience and Objective Rationale of Color, John Wiley & Sons; 1 edition (December 1997).

| | | | |
|---|---|---|---|
| 2. | Elam, Kimberly, 'Geometry of Design', Studies in Proportion and Composition, Princeton Architectural Press, 2001. | | |
| Mode of Evaluation: CAT / Assignment / Quiz / FAT / Project / Seminar | | | |
| Recommended by Board of Studies | 17-08-2017 | | |
| Approved by Academic Council | No. 47 | Date | 05-10-2017 |

| Course code | DESIGN METHODOLOGY | L | T | P | J | C |
|---|---|---|---|---|---|---|
| MDE5002 | | 0 | 0 | 4 | 4 | 3 |

| Pre-requisite | | Syllabus version |
|---|---|---|
| | | v. 1.0 |

**Course Objectives:**

1. Understanding the concept of product design and development.
2. Creativity Techniques for product design.

**Expected Course Outcome:**

The students will have,

1. Ability to carry out product development process and the concept of prototyping.
2. Generate design solutions using various creativity techniques.
3. Demonstrate using different mediums for concept generations.
4. Ability to do rapid prototyping.

| | | |
|---|---|---|
| **Module:1** | | **6 hours** |
| Concept development exercises in product development and innovation using different brainstorming techniques. Design development of 2D, 3D products using metaphors through poetry writing. | | |
| **Module:2** | | **8 hours** |
| Exercises to represent ideas through infographics, low and high fidelity sketches. | | |
| **Module:3** | | **8 hours** |
| Exercises for rendering products through digital mediums. | | |
| **Module:4** | | **8 hours** |
| Exercises to develop prototypes using soft materials (paper, cardboard, thermocol, foam, clay, and POP). | | |
| **Module:5** | | **6 hours** |
| Exercises to develop prototypes using hard materials (wood, FRP, sheet metal and HIPS). | | |
| **Module:6** | | **10 hours** |
| Exercises on surface finishing techniques such as Spray painting, Lacquering, Plating, Product graphics, etc., | | |
| **Module:7** | | **10 hours** |
| Exercises on rapid prototyping techniques. | | |
| **Module:8** | **Contemporary issues:** | **4 hours** |
| Contemporary discussion with the artists and designers. | | |
| | **Total Lecture hours:** | **60 hours** |

**Text Book(s)**

1. Product Design and Development, 3rd Ed., by U. T. Karl and S. D. Eppinger, Tata McGraw Hill, 2004.

**Reference Books**

1. Universal Methods of Design: 100 Ways to Research Complex Problems, Develop Innovative Ideas, and Design Effective Solutions, by Bruce Hanington and Bella Martin.

| | | | |
|---|---|---|---|
| 2. | Delft Design Guide: Design Strategies and Methods by Delft University of Technology Faculty of Industrial Design Engineering, 2013, by Technische Hogeschool Delft, Annemiek van Boeijen, Jaap Daalhuizen. | | |
| 3. | How Designer's Think: The Design Process Demystified, by B. Lawson, Architectural Press, 1997. | | |
| Mode of Evaluation: Assignment / FAT / Project / Seminar | | | |
| Recommended by Board of Studies | 17-08-2017 | | |
| Approved by Academic Council | No. 47 | Date | 05-10-2017 |

| Course code | ART, DESIGN AND SOCIETY | L | T | P | J | C |
|---|---|---|---|---|---|---|
| MDE 5003 | | 2 | 2 | 0 | 0 | 3 |

| Pre-requisite | Syllabus version |
|---|---|
| | v. 1.0 |

**Course Objectives:**

To understand the key principles of art and design and its impact on society

**Expected Course Outcome:**

The students will have,

1. Understanding the culture and its relations to design
2. Creativity methods and function complex analysis
3. Understanding on the Principles of design
4. Design responsibilities

| | | |
|---|---|---|
| **Module:1** | | **4 hours** |
| Culture and its relations to Industrial Design | | |
| **Module:2** | | **4 hours** |
| Inhibitors that prevent solving tasks in new and innovative ways; Creativity methods; Function Complex Analysis | | |
| **Module:3** | | **4 hours** |
| Attributes of products; Indianness in product design; Identifying factors contributing to X-ness in products | | |
| **Module:4** | | **4 hours** |
| Concept of building meaningfulness in product design; Negative impacts of meaningless products in society; Universal Principles of Design | | |
| **Module:5** | | **4 hours** |
| Design responsibility; Social responsibilities of designers | | |
| **Module:6** | | **4 hours** |
| Implications of aesthetics in product design; Key issues in visual arts and design. | | |
| **Module:7** | | **4 hours** |
| Bauhaus and its impact on society; Contributions of Bauhaus to the field of industrial design | | |
| **Module:8** | **Contemporary issues:** | **2 hours** |
| Contemporary discussion with the artists and designers. | | |
| | **Total Lecture hours:** | **30 hours** |

**Text Book(s)**

1. Papanek, V. (1984), “Design for the Real World”, 2nd Edition, London: Thames & Hudson

**Reference Books**

1. Lidwell, W., Holden, K., Butler, J. [Ed] (2003). Universal Principles of Design, Rockport Publishers, USA, Singapore
2. Routledge International Handbook of Participatory Design, Routledge Press, 2013

Mode of Evaluation: CAT / Assignment / Quiz / FAT / Project / Seminar

| | | | |
|---|---|---|---|
| Recommended by Board of Studies | 17-08-2017 | | |
| Approved by Academic Council | No. 47 | Date | 15-10-2017 |

| Course code | INDUSTRIAL DESIGN | L | T | P | J | C |
|---|---|---|---|---|---|---|
| MDE5007 | | 0 | 0 | 4 | 4 | 3 |

| Pre-requisite | | Syllabus version |
|---|---|---|
| | | v. 1.0 |

**Course Objectives:**

1. Understanding the user-centred design process including form and colour theory.
2. Understanding product metamorphosis, and ergonomics.

**Expected Course Outcome:**

The students will have,

1. Ability to carry out product design through proper observation.
2. Ability to generate design concepts for different types of users.
3. Understanding the cognitive, morphological process inherent in applying form analogies.
4. Ability to do implement sustainable design and to evaluate the prototype.

| | | |
|---|---|---|
| **Module:1** | | **6 hours** |
| Exercises on making design brief through different methods of observation. | | |
| **Module:2** | | **8 hours** |
| Exercises on making design brief through different methods of problem identification. | | |
| **Module:3** | | **8 hours** |
| Exercises on making personas with different user study techniques. | | |
| **Module:4** | | **8 hours** |
| Development of design concepts based on themes and attributes. | | |
| **Module:5** | | **6 hours** |
| Development of design concepts based metaphors. | | |
| **Module:6** | | **10 hours** |
| Development of design concepts based on elements from nature. | | |
| **Module:7** | | **10 hours** |
| Development of concept generation, testing and evaluation. | | |
| **Module:8** | **Contemporary issues:** | **4 hours** |
| Contemporary discussion with the artists and designers. | | |
| | **Total Lecture hours:** | **60 hours** |

**Text Book(s)**

1. Carma Gorman, “The Industrial Design Reader”, Skyhorse Publishing, 2003

**Reference Books**

1. Ulrich, Karl T, Eppinger, Steven D, ‘Product Design and Development’, McGraw-Hill, 2004.
2. Cagan, Jonathan, Vogel, Craig M, ‘Creating breakthrough products: Innovation from product planning to program approval’, Financial Times Prentice Hall, 2002.

| | | | |
|---|---|---|---|
| Mode of Evaluation: Assignment / FAT / Project / Seminar | | | |
| Recommended by Board of Studies | 17-08-2017 | | |
| Approved by Academic Council | No. 47 | Date | 05-10-2017 |

| Course code | BASIC ERGONOMICS | L | T | P | J | C |
|---|---|---|---|---|---|---|
| MDE 5005 | | 2 | 0 | 2 | 0 | 3 |
| Pre-requisite | | Syllabus version | | | | |
| | | v. 2.00 | | | | |

**Course Objectives:**

Students will be able to,

1. Implement the principles of ergonomics and how to apply the principles to industrial design.
2. Understand the importance and techniques of human biological data collection and experiments.
3. Obtain a knowledge and ability towards Accident Investigation and Safety Management.

**Expected Course Outcome:**

The students will have,

1. Ability to understand the applications of ergonomic principles in industrial design.
2. Knowledge of the mechanics of human body.
3. Knowledge of the human body motions and limitations.
4. Understanding effect of environmental factors on human behaviour.
5. Knowledge to analyse the non-tangible human factors.
6. Applying the principles of ergonomics in HCI and HMI.

| Module:1 | Introduction to Ergonomics | 4 hours |
|---|---|---|

Welcome and content details – Syllabus, Ergonomics Past to present (History), Understanding Human factors and Ergonomics, Basic Applications and Systems Integration.

| Module:2 | Anthropometry | 4 hours |
|---|---|---|

Measurements of the body used in Human Factors in Engineering (HFE), Factors influencing the change in body size of populations. Statistical Essentials for using Anthropometric data in HFE.

| Module:3 | Body: The mechanical system | 4 hours |
|---|---|---|

Understanding Posture and movement, Fundamental aspects of sitting and standing, Steps for effective workstation design, Workstation design and viewing angles

| Module:4 | Environments factors: Measurement & Design | 4 hours |
|---|---|---|

Fundamentals of Vision and Lighting, Hearing, Sound, Noise and Vibration.

| Module:5 | Health and wellbeing for changing population | 4 hours |
|---|---|---|

Workload, Fitness for work and health, working in hot and cold climates. The mind at work: Intention, Actions and Interpretations and Design for physically challenged.

| Module:6 | Cognitive Ergonomics and Design | 4 hours |
|---|---|---|

Cognitive and behavioral aspects in psychological ambience – Stereotype. Information processing – attention, concentration, perception, memory, vigilance, planning and decision making. Mental workload

| | | |
|---|---|---|
| – Error, Failure and violations by human. Risk – perception and prevention. Cross-cultural Design. | | |
| | | |
| **Module:7** | **Workstation & Task Design** | **4 hours** |
| Basic Applications – Design to fit the target population. Repetitive Tasks: Risk Assessment and Task Design. | | |
| | | |
| **Module:8** | **Contemporary issues:** | **2 hours** |
| Contemporary discussion with industry experts. | | |
| | | |
| | **Total Lecture hours:** | **30 hours** |

| | |
|---|---|
| **Text Book(s)** | |
| 1. | Bridger RS, 'Introduction to Human Factors & Ergonomics', Fourth Edition, Taylor & Francis, 2010. |
| **Reference Books** | |
| 1. | Dul. J and Weerdmeester B, 'Ergonomics for beginners, a quick reference guide, Taylor & Francis, 2008. |
| 2. | Karl Kroemer, Henrike Kroemer, Katrin Kroemer-Elbert, "ERGONOMICS" How to Design for Ease & Efficiency, Prentice Hall International Editions, 1997. |
| 3. | Singh, S (Edt), Ergonomics Interventions for Health and Productivity, Himanshu Publications, Udaipur, New Delhi, 2007. |
| 4. | D. Chakrabarti, Indian Anthropometric Dimensions for ergonomic design practice, National Institute of Design, Ahmedabad, 1997. |
| Mode of Evaluation: CAT / Assignment / Quiz / FAT / Project / Seminar | |

| | | |
|---|---|---|
| **List of Challenging Experiments (Indicative)** | | |
| 1. | Anthropometry | 6 hours |
| 2. | Grip Strength – Hand and Pinch | 3 hours |
| 3. | Hand strength and Back strength | 3 hours |
| 4. | RULA Analysis | 3 hours |
| 5. | RULA Analysis | 3 hours |
| 6. | Measurement of Environmental Factors | 6 hours |
| 7. | Borg Scale of perceived exertion | 3 hours |
| 8. | NASA TLX | 3 hours |
| | Total Laboratory Hours | 30 hours |
| Mode of assessment: Assignments / FAT | | |
| Recommended by Board of Studies | 27-11-2019 | |

| | | | |
|---|---|---|---|
| Approved by Academic Council | No. 57 | Date | 05-12-2019 |

| Course code | COMPUTER AIDED PRODUCT DESIGN | L | T | P | J | C |
|---|---|---|---|---|---|---|
| MDE5008 | | 0 | 0 | 4 | 4 | 3 |

| Pre-requisite | | Syllabus version |
|---|---|---|
| | | v. 1.0 |

**Course Objectives:**

The objective of the course program is,

1. To work on varied projects that expose students to training in digital design using 2D and 3D surface modelling software's.
2. 2D Digital printing 3D scanning. 3D printing and laser cutting

**Expected Course Outcome:**

The students will have ability to develop and have,

1. Ability to have Digital prints
2. Essential skills for 3D Modelling.
3. Ability to apply skills for Realistic renderings.
4. Ability to design and develop digital Portfolio design

| | | |
|---|---|---|
| **Module:1** | | **10 hours** |
| Poster design -1 | | |
| **Module:2** | | **5 hours** |
| Poster design -2 | | |
| **Module:3** | | **20 hours** |
| 3D surface modelling - 1 | | |
| **Module:4** | | **10 hours** |
| 3D surface modelling - 2 | | |
| **Module:5** | | **5 hours** |
| Realistic 3D rendering -1 | | |
| **Module:6** | | **3 hours** |
| Realistic 3D rendering -2 | | |
| **Module:7** | | **5 hours** |
| Portfolio design | | |
| **Module:8** | **Contemporary issues:** | **2 hours** |
| Contemporary discussion with the artists and designers. | | |
| | **Total Lecture hours:** | **60 hours** |

**Text Book(s)**

1. Basem S .El-Haik and A Agus Sudjianto, "Computer Aided Product Design Using Six Sigma for Greatest Value, Wiley Publishing ,2016

**Reference Books**

| | | | |
|---|---|---|---|
| 1. | Alison Beazley and Teny bond, " Computer Aided Pattern Design and product Development ", Wiley – Blackwell Publications, 2009 | | |
| 2. | Justin Riggs, " Computer – Aided Design and Manufacturing ", Wilford Press,2016 | | |
| Mode of Evaluation: CAT / Assignment / Quiz / FAT / Project / Seminar | | | |
| Recommended by Board of Studies | 17-08-2017 | | |
| Approved by Academic Council | No. 47 | Date | 15-10-2017 |

VIT
Vellore Institute of Technology
(Deemed to be University under section 3 of UGC Act, 1956)

## SYLLABUS FOR

## PROGRAM ELECTIVE

## COURSES

| Course code | HUMAN FACTORS IN DESIGN | L | T | P | J | C |
|---|---|---|---|---|---|---|
| MDE 6021 | | 2 | 0 | 2 | 0 | 3 |
| Pre-requisite | | Syllabus version | | | | |
| MDE5005 | Basic Ergonomics | v.2.00 | | | | |

**Course Objectives:**

The students will have,

1. Knowledge in anthropometry, biomechanical and physiological principles and how they are used to optimize human well-being and overall performance.
2. Ability to Identify, Analyse, Setup and implement solutions to a human factors problem.
3. Knowledge on the impact of human factors in workplace design-environment and Productivity.

**Expected Course Outcome:**

The students will have,

1. Ability to consider human factors and limitations in designing consumer/industrial products, workplaces and work environment.
2. Understanding the concepts of applied anthropometry, workplace design and the ergonomics aspects in various environmental conditions.
3. Exposure to digital Human modelling.
4. Ability to apply human factors in various environments and considering human factors in human errors & accidents.

| | | |
|---|---|---|
| **Module:1** | Introduction to Human Factors | 2 hours |

Human – System Interaction. Ergonomic Design. Human centric Design of service/system. Selection of action in single/ multi task performance. Motor control of action – co-ordination of action, sequencing and timing of action- Reaction time. Motor Learning.

| | | |
|---|---|---|
| **Module:2** | Design of Task/Job, workplace and Environment | 4 hours |

Task Analysis. Job Design. Personnel Recruitment, selection, evaluation and training. Human Factors in Organisational design and management – situation awareness. Affective engineering and design with respect to Workplace Design. Role of Illumination, Noise, Vibration, and Motion.

| | | |
|---|---|---|
| **Module:3** | Design for Health, Safety, and Comfort. | 4 hours |

Occupational health and safety management. Human error and reliability analysis. Management low back disorder in Workplace -MSD. Warning and Hazards communications. Use of personal protective equipment in workplace.

| | | |
|---|---|---|
| **Module:4** | Performance Modelling and Evaluation. | 6 hours |

| | | |
|---|---|---|
| Modelling Human performance in complex systems. Human supervisory controls. Neuro-ergonomics in Human – system interaction. Digital Human simulation in Design and virtual environment. Accident and Incident investigation. Cost Benefit Analysis in Human-system Investments. Methods for evaluations outcomes. | | |
| | | |
| **Module:5** | Human Factors and Cognitive Aspects | 4 hours |
| Information processing – sensation and perception. Decision making models, decision support and problem solving. Mental workload and situation awareness. Social and Organisational bases. Anthropometry for Product and Workspace Design. | | |
| | | |
| **Module:6** | Human Computer Interaction | 4 hours |
| Visual Displays – Information visualization. Human factors in Online communications and social computing. Human factors and information security. Usability testing – UX and UI perspectives. User Requirement analysis. Website design and evaluation. Human Factors in ambience intelligence environments. AI and Human with respect to HCI. Interactivity – Evolution and emerging tools. | | |
| | | |
| **Module:7** | Applications of Human factors and Ergonomics | 4 hours |
| Design for people with functional limitations, Aged and Children. Design for All: Computer assisted design of user interface. HFE Standards. Office Ergonomics. HFE in Manufacturing, Healthcare, Transport, Automation Design, and Aviation. | | |
| | | |
| **Module:8** | Contemporary issues: | 2 hours |
| Contemporary discussion with the artists and designers. | | |
| | | |
| | Total Lab hours: | 30 hours |

**List of Experiments (Indicative)**

1. Ergonomic analysis of Manual Material Handling equipment.
2. Workspace design and seating, arrangement of components within a physical space.
3. Design of repetitive task, design of manual handling task.
4. Ergonomic analysis of Controls and data entry devices.
5. Illumination, climate, noise, motion, sound, vibration.
6. Human error, accidents, human factors and the automobile.
7. Organizational and social aspects.
8. Virtual environments.

Text Book(s)

| | |
|---|---|
| 1. | G. Karl Kroemer, Henrike Kroemer, Katrin Kroemer-Elbert, “ERGONOMICS” How to Design for Ease & Efficiency, Prentice Hall International Editions, 2010. |

Reference Books

| | |
|---|---|
| 1. | Mark S Sanders, “Human Factors in Engineering and Design”, McGraw Hill, New York, 1993. |

| | | | |
|---|---|---|---|
| 2. | J. Bridger R S, “Introduction to Ergonomics”, Taylor and Francis, London, 2003. | | |
| Mode of Evaluation: Assignment / FAT / Project | | | |
| Recommended by Board of Studies | 27-11-2019 | | |
| Approved by Academic Council | No. 56 | Date | 05-12-2019 |

| Course code | Entrepreneurship and Startups | L | T | P | J | C |
|---|---|---|---|---|---|---|
| MDE 6002 | | 2 | 0 | 0 | 0 | 4 |
| Pre-requisite | | Syllabus version | | | | |
| Anti-requisite | | v.2.00 | | | | |

**Course Objectives:** To understand contemporary management and financial principles for entrepreneurs and new concepts in venture capital for start-ups.

**Expected Course Outcome:**

The ability to create entrepreneurial opportunities through the invention, development and exploitation of entirely new ideas, products and services, and/or the creation of new industries, infrastructures, and ways of doing business.

| Module:1 | | 4 hours | |
|---|---|---|---|

Corporate strategy for product planning. Management thinking on new products. Seeing product as part of the image of the company. Moving into future, defining companies business, technology transfer problems, SWOT analysis. Analysis of strength, weakness, opportunities and threat.

| Module:2 | | 4 hours | |
|---|---|---|---|

Brief introduction to assessing of companies financial performance. Study of product life cycle, Monitoring of sale and competition, when to introduce new products.

| Module:3 | | 4 hours | |
|---|---|---|---|

Assessing market potentials for new products, market research, Consumer research and its demographic aspects, setting up a questionnaire for these aspects. Establishing market segment and their dimensions. Risk management and venture capital.

| Module:4 | | 4 hours | |
|---|---|---|---|

Assessing competitors share and locating direct and indirect sources to understand this. Assessing competitors marketing approach and strategies.

| Module:5 | | 4 hours | |
|---|---|---|---|

Developing a strategy to introduce new products, using market gaps as competitive edge, cost

| | | | |
|---|---|---|---|
| considerations and profitability of new products. | | | |
| | | | |
| **Module:6** | | **4 hours** | |
| Developing a product plan for Start-ups and product mix, price policy, positioning the company, product positioning, planning for future position. Evolving a design brief by interlinking with market/product plan. Seeing product design as a part of a scheme to develop brand image, house style, marketing strategy and corporate image. Discriminating product range from each other and from competitor's range/ patents. Legal aspects. | | | |
| | | | |
| **Module:7** | | **4 hours** | |
| Developing product specifications for different products within the range/ patents. Market communication, launching the product, monitoring the market performance. | | | |
| | | | |
| **Module:8** | **Contemporary issues:** | **2 hours** | |
| | **Total Lecture hours:** | **30 hours** | |

**Text Book(s)**

| | |
|---|---|
| 1. | Kotler Philips, 'Marketing Management', 5th ed., Prentice Hall, New Delhi, 2004. |

**Reference Books**

| | |
|---|---|
| | Mode of Evaluation: Assignment / FAT / Project |

| | | | |
|---|---|---|---|
| Recommended by Board of Studies | 16-06-2016 | | |
| Approved by Academic Council | No. 41 | Date | 03-06-2016 |

| Course code | MEDICAL PRODUCT DESIGN | L | T | P | J | C |
|---|---|---|---|---|---|---|
| MDE6018 | | 0 | 0 | 4 | 4 | 3 |

| Pre-requisite | | Syllabus version |
|---|---|---|
| | | v. 1.0 |

**Course Objectives:**

To understand the key aspects of designing and developing products for medical applications

**Expected Course Outcome:**

The students will have,

1. Ability to apply design knowledge in observation and idea generations.
2. Understanding to apply design principles pertaining to medical field for designing and developing medical products
3. Knowledge for applying standards pertaining to medical field for designing and developing medical products..

| | | |
|---|---|---|
| **Module:1** | | **6 hours** |
| Classifying medical product | | |
| | | |
| **Module:2** | | **8 hours** |
| Designing Class I medical product | | |
| | | |
| **Module:3** | | **8 hours** |
| Designing Class I medical product | | |
| | | |
| **Module:4** | | **8 hours** |
| Developing Class II medical product | | |
| | | |
| **Module:5** | | **6 hours** |
| Developing Class II medical product | | |
| | | |
| **Module:6** | | **10 hours** |
| Designing Class III medical product | | |
| | | |
| **Module:7** | | **10 hours** |
| Designing Class III medical product | | |
| | | |
| **Module:8** | **Contemporary issues:** | **4 hours** |
| Contemporary discussion with the artists and designers. | | |
| | | |
| | **Total Lecture hours:** | **60 hours** |

**Text Book(s)**

| | |
|---|---|
| 1. | Peter Ogrodnik, (2012), “Medical Device Design”, Academic press |

**Reference Books**

| | |
|---|---|
| 1. | Biodesign: The Process of Innovating Medical Technologies, Zenios, Makower, Yock, CU Press |
| 2. | http://web.mit.edu/2.75/resources/FUNdaMENTALS.html |

| | | | |
|---|---|---|---|
| Mode of Evaluation: Assignment / FAT / Project / Seminar | | | |
| Recommended by Board of Studies | 25-09-2017 | | |
| Approved by Academic Council | No. 47 | Date | 05-10-2017 |

| Course code | TRANSPORTATION DESIGN | L | T | P | J | C |
|---|---|---|---|---|---|---|
| MDE 6022 | | 0 | 0 | 4 | 4 | 3 |
| Pre-requisite | | Syllabus version | | | | |
| | | v. 1.0 | | | | |

**Course Objectives:**

To have the knowledge about automotive styling and designing.

**Expected Course Outcome:**

Will gain the aesthetic sensibility in automobile design as well as manufacturing constraints.

| | | |
|---|---|---|
| **Module:1** | | 6 hours |
| Sketching automobile. | | |
| **Module:2** | | 8 hours |
| Rendering automobile with digital medium. | | |
| **Module:3** | | 8 hours |
| Model making with different materials. | | |
| **Module:4** | | 8 hours |
| Evolution study. | | |
| **Module:5** | | 6 hours |
| Trend analysis and market study. | | |
| **Module:6** | | 10 hours |
| | | |
| **Module:7** | | 10 hours |
| | | |
| | | |
| **Module:8** | Contemporary issues: | 4 hours |
| Contemporary discussion with the artists and designers. | | |
| | | |
| | Total Lab hours: | 60 hours |

Text Book(s)

1. P. Sparke, A Century of Car Design, Mitchell Beasley, London, 2002

Reference Books

1. C. E. Armi, American Car Design Now: Inside the Studios of Today's top Car Designers, Rizzoli : Distributed in the U.S. trade by St. Martin's Press, New York, 2003
2. H. Evenden, Moving Forward: New Directions in Transport Design, Helen Evendon, London, 2007
3. L. W. Haajanen & B. Nydén, Illustrated Dictionary of Automobile Body Styles, McFarland & Co., Jefferson, N.C., 2002
4. T. Lewin, R. Broff, How to design cars like a Pro, MBI Publishing Company, MN, USA,

| | | | |
|---|---|---|---|
| | 2003 | | |
| Mode of Evaluation: Assignment / FAT / Project | | | |
| Recommended by Board of Studies | 03-03-2018 | | |
| Approved by Academic Council | No. 49 | Date | 15-03-2018 |

| Course code | SUSTAINABLE PRODUCT DESIGN | L | T | P | J | C |
|---|---|---|---|---|---|---|
| MDE 6003 | | 0 | 0 | 4 | 4 | 3 |

| Pre-requisite | | Syllabus version |
|---|---|---|
| | | v. 1.0 |

**Course Objectives:**

1. Understanding the fundamentals of Sustainable product design
2. Ability to do sustainable projects using new emerging technologies
3. Ability to explore sustainable materials and product packaging.

**Expected Course Outcome:**

The students will have,

1. Ability to explore new emerging sustainable technologies.
2. Exposure on sustainable materials and sustainable product packaging
3. Ability to make sustainable food cutleries and recyclable product designs
4. Knowledge of sustainable energies and vehicles.

| | | |
|---|---|---|
| **Module:1** | | **6 hours** |
| Explorations on new emerging sustainable/eco-friendly technologies. | | |
| **Module:2** | | **8 hours** |
| Exercises for sustainable material exploration. | | |
| **Module:3** | | **8 hours** |
| Exercises for sustainable product packaging. | | |
| **Module:4** | | **8 hours** |
| Exercises for sustainable food cutleries. | | |
| **Module:5** | | **6 hours** |
| Exercises for recyclable product design. | | |
| **Module:6** | | **10 hours** |
| Exercises for sustainable energies | | |
| **Module:7** | | **10 hours** |
| Exercises for sustainable vehicles | | |
| **Module:8** | **Contemporary issues:** | **4 hours** |
| Contemporary discussion with the artists and designers. | | |
| | **Total Lecture hours:** | **60 hours** |

**Text Book(s)**

1. Silvia Barbero, et al (2012). “Eco Design”, Ullmann, Potsdam, Germany.

**Reference Books**

1. William Mcdonough and Michael Braungart (2002). “Cradle to Cradle: Remaking the Way We Make Things”, North Point Press, New York.
2. Lance Hosey, (2012). “The Shape of Green: Aesthetics, Ecology, and Design”, Island Press, Washington, D.C.
3. Monto Mani and Prabhu Kandachar Eds] (2015), “Design for sustainable well-being and empowerment: Selected Papers”, IISc, Bangalore and TU Delft, The Netherlands.

| | | | |
|---|---|---|---|
| 4. | Papanek, V. (1984), “Design for the Real World”, 2nd Edition, London: Thames & Hudson. | | |
| Mode of Evaluation: Assignment / FAT / Project / Seminar | | | |
| Recommended by Board of Studies | 17-08-2017 | | |
| Approved by Academic Council | No. 47 | Date | 15-10-2017 |

VIT
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| Course code | SMART PRODUCT DESIGN | L | T | P | J | C |
|---|---|---|---|---|---|---|
| MDE6023 | | 0 | 0 | 4 | 4 | 3 |
| Pre-requisite | | Syllabus version | | | | |
| | | v. 1.0 | | | | |

**Course Objectives:**

1. Understanding the user-centred design process.
2. Understanding the trend and play along with the new evolved product design.

**Expected Course Outcome:**

The students will have,
1. Understanding the evolution of smart products.
2. Ability to generate design concepts using smart product components.
3. Understanding the smart eco system.
4. Ability to integrate IOT in new products and to evaluate the prototype.

| | | |
|---|---|---|
| **Module:1** | | **6 hours** |
| Smart Product history and evolution. | | |
| **Module:2** | | **8 hours** |
| Familiarizing smart product components -1 | | |
| **Module:3** | | **8 hours** |
| Familiarizing smart product components - 2 | | |
| **Module:4** | | **6 hours** |
| Electronic programming – 1 | | |
| **Module:5** | | **6 hours** |
| Electronic programming – 2 | | |
| **Module:6** | | **10 hours** |
| Introduction to smart product eco-system. | | |
| **Module:7** | | **10 hours** |
| Integration of IOT in products. | | |
| **Module:8** | **Contemporary issues:** | **4 hours** |
| Contemporary discussion with the artists and designers. | | |
| | **Total Lecture hours:** | **60 hours** |

**Text Book(s)**

1. **Smart Product Design,** Hardcover – August 1, 2017, Send points Publishing Co ltd

**Reference Books**

1. Smart things, Ubiquitous Computing User Experience Design , Mike Kuniavsky

Mode of Evaluation: Assignment / FAT / Project / Seminar

| | | | |
|---|---|---|---|
| Recommended by Board of Studies | 25-09-2017 | | |
| Approved by Academic Council | No. 47 | Date | 05-10-2017 |

| Course code | DESIGN STRATEGY AND INNOVATION | L | T | P | J | C |
|---|---|---|---|---|---|---|
| MDE 6005 | | 2 | 0 | 0 | 4 | 3 |
| Pre-requisite | | Syllabus version | | | | |
| | | v. 1.0 | | | | |

**Course Objectives:**

The course prepares students to create, lead and manage new products, systems and services that have a sustainable impact on the economy, society and the environment.

**Expected Course Outcome:**

Students learn how to integrate design-led strategies into existing practice in business, government agencies, social enterprise and communities.

| | | |
|---|---|---|
| **Module:1** | | **4 hours** |

Understanding inhibitors that keep us from solving tasks in new and innovative ways

| | | |
|---|---|---|
| **Module:2** | | **4 hours** |

Methods of creating innovative ideas

| | | |
|---|---|---|
| **Module:3** | | **4 hours** |

Understanding perceptions & paradigms which enable students to “think outside the box’.

| | | |
|---|---|---|
| **Module:4** | | **4 hours** |

Tangible and intangible relevance of broadening one’s perspectives in Arts Aesthetics, Science and Technology to design.

| | | |
|---|---|---|
| **Module:5** | | **4 hours** |

Exposure to different thoughts and perspectives, concerns and issues in the Context of design.

| | | |
|---|---|---|
| **Module:6** | | **4 hours** |

Challenges in design, user experience, design process. Exposure to the emerging areas of design; Disruptive technology.

| | | |
|---|---|---|
| **Module:7** | | **4 hours** |

Importance of sustainable design practices, preserving traditional practices & designing for the underserved communities.

| | | |
|---|---|---|
| **Module:8** | **Contemporary issues:** | **2 hours** |

| | | | |
|---|---|---|---|
| | **Total Lecture hours:** | **30 hours** | |

**Text Book(s)**

1. Christopher Jones, (1970). Design Methods Seeds of Human Future, Wiley, Interscience.

**Reference Books**

<table>
<tr><td>1.</td><td colspan="4">Covey, S. (1990). The Seven Habits of Highly Effective People. Free Press; 1st edition.</td></tr>
<tr><td>2.</td><td colspan="4">Athvankar, Uday, (1997). Mental Imagery as a Design Tool, Cybernetics and Systems, Vol 28, No 1, Jan-Feb, l997, pp 25-42.</td></tr>
<tr><td colspan="5">Mode of Evaluation: CAT / Assignment / Quiz / FAT / Project / Seminar</td></tr>
<tr><td colspan="2">Recommended by Board of Studies</td><td colspan="3">03-03-2018</td></tr>
<tr><td colspan="2">Approved by Academic Council</td><td>No. 49</td><td>Date</td><td>15-03-2018</td></tr>
</table>

| Course code | SERVICE DESIGN | L | T | P | J | C |
|---|---|---|---|---|---|---|
| MDE 6006 | | 0 | 0 | 4 | 4 | 3 |

| Pre-requisite | | Syllabus version |
|---|---|---|
| | | v. 1.0 |

**Course Objectives:**

The aim of this course is to make students understand the concept of service design.

**Expected Course Outcome:**

Students should be able to carry out innovative service designs through designing, prototyping and testing.

| | | |
|---|---|---|
| **Module:1** | | **4 hours** |
| Exercises to connect with people to create value to the product through marketing | | |
| **Module:2** | | **4 hours** |
| Exercises to design products with service application | | |
| **Module:3** | | **4 hours** |
| Exercises to develop service design using visual explanations. | | |
| **Module:4** | | **4 hours** |
| Exercises for designing services as a series of interactions. | | |
| **Module:5** | | **4 hours** |
| Exercises to design services delivering positive impact. | | |
| **Module:6** | | **4 hours** |
| Exercises to analyze existing design services | | |
| **Module:7** | | **4 hours** |
| The outcome of the analysis to a viable design intervention with viable proposition. | | |
| **Module:8** | **Contemporary issues:** | **2 hours** |
| | | |
| | **Total Lecture hours:** | **60 hours** |

**Text Book(s)**

1. Marc Stickdorn, “This is service design thinking: Basics, tools, cases”, Consortium Book Sales & Dist, 2010

**Reference Books**

1. Ramaswamy, Rohit, 1996. Designing services (chapter 1) and the service design and management model (chapter 2) in Design and Management of Service Processes: Keeping Customers for Life, Prentice Hall.

Mode of Evaluation: Assignment / FAT / Project / Seminar

| | | | |
|---|---|---|---|
| Recommended by Board of Studies | 03-03-2018 | | |
| Approved by Academic Council | No. 49 | Date | 15-03-2018 |

| Course code | USER EXPERIENCE DESIGN | L | T | P | J | C |
|---|---|---|---|---|---|---|
| MDE 6007 | | 0 | 0 | 4 | 4 | 3 |
| Pre-requisite | | Syllabus version | | | | |
| | | V.1 | | | | |

**Course Objectives:**

To learn User Experience of any Product, Application and its Service.

**Expected Course Outcome:**

Will be knowing the experiential practices of product and services

| | | |
|---|---|---|
| **Module:1** | | **4 hours** |
| Experiments to learn how users interact with product | | |
| **Module:2** | | **4 hours** |
| Resarch method tools | | |
| **Module:3** | | **4 hours** |
| Data visualization and wire framing | | |
| **Module:4** | | **4 hours** |
| Usability testing technique | | |
| **Module:5** | | **4 hours** |
| Communicating and implementing UX deliverable | | |
| **Module:6** | | **4 hours** |
| | | |
| **Module:7** | | **4 hours** |
| | | |
| **Module:8** | **Contemporary issues:** | **4 hours** |

| | | | |
|---|---|---|---|
| Communicating and implementing UX deliverable | | | |
| | **Total Lecture hours:** | **60 hours** | |
| **Text Book(s)** | | | |
| 1. | William Buxton, “Sketching User Experiences: Getting the Design Right and the Right Design” , Morgan Kaufmann Publishers, 2007 | | |
| **Reference Books** | | | |
| 1. | A Project Guide to UX Design: For user experience designers in the field or in the making by Russ Unger, Carolyn Chandler | | |
| 2. | The Elements of User Experience: User-Centered Design for the Web and Beyond by Jesse James Garrett | | |
| Mode of Evaluation: CAT / Assignment / Quiz / FAT / Project / Seminar | | | |
| Recommended by Board of Studies | 03-03-2018 | | |
| Approved by Academic Council | No. 49 | Date | 15-03-2018 |

| Course code | DESIGN WORKSHOP | L | T | P | J | C |
|---|---|---|---|---|---|---|
| MDE 6008 | | 0 | 0 | 4 | 4 | 3 |
| Pre-requisite | | Syllabus version | | | | |
| | | v. 1.20 | | | | |

**Course Objectives:**

The objective of this workshop is to let the students develop the ability to work on design projects in collaborative groups working on a topic formulated by the faculty members.

**Expected Course Outcome:**

Learn relevant approaches, hands on experience and skill development

| | | |
|---|---|---|
| **Module:1** | | **4 hours** |
| Design problems with practicing professionals | | |
| **Module:2** | | **4 hours** |
| Printmaking | | |
| **Module:3** | | **4 hours** |
| Pottery and Ceramics | | |
| **Module:4** | | **4 hours** |
| Arts Sculpture, Painting, Story Telling and Narrative | | |
| **Module:5** | | **4 hours** |
| Toy Design, Exhibition Design | | |
| **Module:6** | | **4 hours** |
| | | |
| **Module:7** | | **4 hours** |
| | | |
| **Module:8** | **Contemporary issues:** | **4 hours** |
| | | |
| | **Total Lecture hours:** | **60 hours** |

**Text Book(s)**

**Reference Books**


1. Robin Williams, John Tollett, Design Workshop, Peachpit Press; 2nd edition ( 2006)
2. Robin Williams, John Tollett, Pearson (2002)

| | | | |
|---|---|---|---|
| Mode of Evaluation: CAT / Assignment / Quiz / FAT / Project / Seminar | | | |
| Recommended by Board of Studies | 03-03-2018 | | |
| Approved by Academic Council | No. 49 | Date | 15-03-2018 |

| Course code | INTERACTION DESIGN | L | T | P | J | C |
|---|---|---|---|---|---|---|
| MDE6024 | | 0 | 0 | 4 | 4 | 3 |

| Pre-requisite | Syllabus version |
|---|---|
| | v. 1.0 |

**Course Objectives:**

1. Understanding the user-centred design process.
2. To understand the basic Interaction Design and way it can be used in product design.

**Expected Course Outcome:**

The students will have,

1. Knowledge to carry out users' requirement through proper observation.
2. Ability to generate design concepts for different types of users.
3. Understanding the cognitive process of humans in interactions.
4. Ability to prototype, test, and design the required interactions.

| | | |
|---|---|---|
| **Module:1** | | **6 hours** |
| Exercises on conceptualizing basic interactions with a product. | | |
| **Module:2** | | **8 hours** |
| Exercises on conceptualizing cognitive aspects of interaction design. | | |
| **Module:3** | | **8 hours** |
| Experiments on Social and emotional interaction. | | |
| **Module:4** | | **8 hours** |
| Data analysis and development of interfaces. | | |
| **Module:5** | | **6 hours** |
| Interpretation and presentation of the data and interface design. | | |
| **Module:6** | | **10 hours** |
| Developing interface design. | | |
| **Module:7** | | **10 hours** |
| Prototyping and construction | | |
| **Module:8** | **Contemporary issues:** | **4 hours** |
| Contemporary discussion with the artists and designers. | | |
| | **Total Lecture hours:** | **60 hours** |

**Text Book(s)**

| | |
|---|---|
| 1. | About Face 3: The Essentials of Interaction Design, Alan Cooper, Robert Reimann, David Cronin |

**Reference Books**

| | |
|---|---|
| 1. | Preece, Rogers and Sharp, Interaction Design: Beyond Human–Computer Interaction, John Wiley and Sons, Delhi, 2003. |
| 2. | Shneiderman, Designing the User Interface: Strategies for Effective Human-Computer Interaction, (3rd Ed.), Addison Wesley, 2000. |

| | | | |
|---|---|---|---|
| 3. | Andrew Sears, Julie A. Jacko The Human-Computer Interaction Handbook: Fundamentals, Evolving Technologies, New York: John Wiley & Sons, 2002. | | |
| Mode of Evaluation: Assignment / FAT / Project / Seminar | | | |
| Recommended by Board of Studies | 03-03-2018 | | |
| Approved by Academic Council | No. 49 | Date | 15-03-2018 |

| Course code | DIY DESIGN | L | T | P | J | C |
|---|---|---|---|---|---|---|
| MDE 6025 | | 0 | 0 | 4 | 4 | 3 |

| Pre-requisite | | Syllabus version |
|---|---|---|
| | | v. 1.0 |

**Course Objectives:**

1. Understanding the DIY concept of product design and development.
2. Ability to create own DIY projects with the help of design processes
3. Ability to carry out innovative DIY products

**Expected Course Outcome:**

The students will have

1. Ability to design furniture's and home based decors on DIY standards and methodology.
2. Exposure to design less complex DIY products and products using recycled materials
3. Ability to design DIY games
4. Develop Lay flat DIY Products out of metal.

| | | |
|---|---|---|
| **Module:1** | | **6 hours** |
| Exercises to design DIY (Do it yourself) based furniture. | | |
| **Module:2** | | **8 hours** |
| Exercises to design DIY based home decors | | |
| **Module:3** | | **8 hours** |
| Exercises to design less complex DIY products. | | |
| **Module:4** | | **8 hours** |
| Exercises for designing DIY products using recycled materials. | | |
| **Module:5** | | **6 hours** |
| Exercises to design DIY games | | |
| **Module:6** | | **10 hours** |
| Exercises to design DIY Products using metal. | | |
| **Module:7** | | **10 hours** |
| Exercise to design Lay Flat DIY Products | | |
| **Module:8** | **Contemporary issues:** | **4 hours** |
| Contemporary discussion with the artists and designers. | | |
| | **Total Lecture hours:** | **60 hours** |

**Text Book(s)**

1. White Lemon, "365 Days of DIY", CreateSpace Independent Publishing Platform, 2016

**Reference Books**

1. Tsia Carson, "Craftivity: 40 Projects for the DIY Lifestyle", Harper Perennial, 2006
2. Julian Cassell and Peter Parham, "DIY: Know-how with Show-how", Dorling Kindersley, 2012

Mode of Evaluation: Assignment / FAT / Project / Seminar

| | | | |
|---|---|---|---|
| Recommended by Board of Studies | 03-03-2018 | | |
| Approved by Academic Council | No. 49 | Date | 15-03-2018 |

| Course code | CULTURE EMBEDDED DESIGN | L | T | P | J | C |
|---|---|---|---|---|---|---|
| MDE 6026 | | 0 | 0 | 4 | 4 | 3 |
| Pre-requisite | | Syllabus version | | | | |
| | | v. 1.0 | | | | |

**Course Objectives:**

To understand the way of design approach to tradition and culture.

**Expected Course Outcome:**

The students will have,

1. Understanding the intercultural influence in design.
2. Understanding the religious influence in design
3. Ability to adapt to new perceptions in design.
4. Understanding the business practice with cultural constraints.

| | | |
|---|---|---|
| **Module:1** | | **4 hours** |
| Exercises on understanding the results of intercultural influence in design. | | |
| | | |
| **Module:2** | | **4 hours** |
| Exercises on predicting the results of intercultural encounters' influence in design. | | |
| | | |
| **Module:3** | | **4 hours** |
| Exercises on Religious influence in design. | | |
| | | |
| **Module:4** | | **4 hours** |
| Use of cultural intelligence in networking. | | |
| | | |
| **Module:5** | | **4 hours** |
| Experiments on different perceptions. | | |
| | | |
| **Module:6** | | **2 hours** |
| Introducing business practices with cultural constraints. | | |
| | | |
| **Module:7** | | **6 hours** |
| Exercises on business practices with cultural constraints. | | |
| | | |
| **Module:8** | **Contemporary issues:** | **2 hours** |
| Contemporary discussion with the artists and designers. | | |
| | | |
| | **Total Lecture hours:** | **30 hours** |

**Text Book(s)**

| | |
|---|---|
| 1. | David Raizman; History of Modern Design, Prentice Hall, 2010 |
| 2. | Cross, N; Design Thinking: Understanding How Designers Think and Work, Berg, Oxford, 2011. |

**Reference Books**

| | |
|---|---|
| 1. | Journal of Design History, Oxford Journals |

| | | | |
|---|---|---|---|
| Mode of Evaluation: Assignment / FAT / Project / Seminar | | | |
| Recommended by Board of Studies | 03-03-2018 | | |
| Approved by Academic Council | No. 49 | Date | 15-03-2018 |

| Course code | NATURE OF MATERIALS AND PROCESSES | L | T | P | J | C |
|---|---|---|---|---|---|---|
| MDE5004 | | 2 | 2 | 0 | 0 | 3 |
| Pre-requisite | | Syllabus version | | | | |
| | | v. 1.0 | | | | |

**Course Objectives:**

1. Understanding the nature & qualities of materials and various processing techniques for achieving desired form and colour in newly designed products.
2. To identify various kinds of material properties and their usages
3. To learn various fundamental aspects of materials and the technologies use to process the materials

**Expected Course Outcome:**

The students will have,

1. Ability to identify the properties and usage of thermoplastics and thermosetting plastics
2. Understanding various selection and applications with limits & advantages of molding processes
3. Ability in recognizing various manufacturing processes and assembly techniques with the concept of structure and costing
4. Understanding various industrial finishes for plastics, wood and metals with the understanding of natural materials.

| | | |
|---|---|---|
| **Module:1** | | **4 hours** |
| Properties and usage of thermoplastics, thermosetting plastics. | | |
| **Module:2** | | **4 hours** |
| Process of selection and applications of plastics for engineering and consumer products. | | |
| **Module:3** | | **4 hours** |
| Design limitations and specific advantages of plastic molding processes. | | |
| **Module:4** | | **4 hours** |
| Assembly and Decorative techniques for plastic product, Manufacturing processes and assembly techniques for ferrous and nonferrous metals. | | |
| **Module:5** | | **4 hours** |
| Concepts of structure and costing. Significance of form in structural strength of products. Influence of materials and processes on product aesthetics. | | |
| **Module:6** | | **4 hours** |
| Industrial finishes for plastic, wood and metals. Properties and use of rubber, ceramics and glass. | | |
| **Module:7** | | **4 hours** |
| Properties of natural materials like wood, bamboo, cane, leather, cloth, jute and paper and their use at craft and industrial levels. | | |
| **Module:8** | **Contemporary issues:** | **2 hours** |
| Contemporary discussion with the artists and designers. | | |
| | **Total Lecture hours:** | **30 hours** |

**Text Book(s)**

| | | | |
|---|---|---|---|
| 1. | Thompson R, 'Manufacturing process for design professionals', Thames and Hudson, London, 2007. | | |
| **Reference Books** | | | |
| 1. | Ashby, Michael, Johnson, Kara, 'Materials and Design: The Art and Science of Material Selection in Product Design', Butterworth-Heinemann, 2002. | | |
| 2. | Garratt J, 'Design and Technology', Cambridge University Press, UK, 2004. | | |
| Mode of Evaluation: CAT / Assignment / Quiz / FAT / Project / Seminar | | | |
| Recommended by Board of Studies | 17-08-2017 | | |
| Approved by Academic Council | No. 47 | Date | 05-10-2017 |

| Course code | NEW TECHNOLOGIES FOR DESIGN | L | T | P | J | C |
|---|---|---|---|---|---|---|
| MDE 6027 | | 0 | 0 | 4 | 4 | 3 |
| Pre-requisite | | Syllabus version | | | | |
| | | V.1 | | | | |

**Course Objectives:**

3. Understanding the evolution of technologies
4. Ability to apply new design methodologies to evolve new technologies
5. Ability to use new manufacturing technologies for development of a product

**Expected Course Outcome:**

The students will have,

1. Ability to create real time design modification using data visualization.
2. Capability to create virtual simulations and walk throughs of various models
3. Ability to make product models using new manufacturing technologies like 3D printing and Laser cutting.
4. Generate high fidelity models with high quality renders

| | | |
|---|---|---|
| **Module:1** | | **6 hours** |
| Real time design modification | | |
| **Module:2** | | **8 hours** |
| Data visualization | | |
| **Module:3** | | **8 hours** |
| Virtual simulations | | |
| **Module:4** | | **8 hours** |
| 3D printing | | |
| **Module:5** | | **6 hours** |
| Laser cutting | | |
| **Module:6** | | **10 hours** |
| CNC machining | | |
| **Module:7** | | **10 hours** |
| High Fidelity model generation and renderings | | |
| **Module:8** | **Contemporary issues:** | **4 hours** |
| Contemporary discussion with the artists and designers. | | |
| | **Total Lecture hours:** | **60 hours** |

**Text Book(s)**

1. New Technologies - Conceived and edited by Phaidon Editors, Phaidon Design Classics, 2009

**Reference Books**

1. Mass Production - Conceived and edited by Phaidon Editors, Phaidon Design Classics, 2009

Mode of Evaluation: Assignment / FAT / Project / Seminar

| | | | |
|---|---|---|---|
| Recommended by Board of Studies | 03-03-2018 | | |
| Approved by Academic Council | No. 49 | Date | 15-03-2018 |

| Course code | Product Detailing | L | T | P | J | C |
|---|---|---|---|---|---|---|
| MDE6020 | | 0 | 0 | 4 | 4 | 3 |

| Pre-requisite | | Syllabus version |
|---|---|---|
| | | 1.0 |

**Course Objectives:**

1. Understanding the fundamentals of part modelling
2. Understanding various aspects of product component generation
3. Ability to manipulate a 2D drawing to a high-Fidelity model.

**Expected Course Outcome:**

The students will have,

1. Generate parts using modelling techniques
2. Ability to create Reverse engineering of a given component
3. Capability to make Assembly and 2d drawings of the models
4. Understanding to make draft for mould manufacturing
5. Ability to make high fidelity model
6. Knowledege to use rapid manufacturing techniques to create prototype

| | | |
|---|---|---|
| **Module:1** | | **6 hours** |
| Part modelling | | |
| | | |
| **Module:2** | | **8 hours** |
| Reverse engineering (given component part) | | |
| | | |
| **Module:3** | | **8 hours** |
| Assembly | | |
| | | |
| **Module:4** | | **8 hours** |
| 2D drawing | | |
| | | |
| **Module:5** | | **6 hours** |
| Draft for mould manufacturing | | |
| | | |
| **Module:6** | | **10 hours** |
| High Fidelity Model | | |
| | | |
| **Module:7** | | **10 hours** |
| Prototype Manufacturing | | |
| | | |
| **Module:8** | **Contemporary issues:** | **4 hours** |
| Contemporary discussion with the artists and designers. | | |
| | | |
| | **Total Lecture hours:** | **60 hours** |

**Text Book(s)**

1.

**Reference Books**

1. Robert A. Malloy, Plastic Part Design for Injection Molding, Hanser Publication, 2010
2. Plastic process handbook : Myer Kutz.
3. Guide to injection molding : Prabodh Bolur.

| | | | |
|---|---|---|---|
| 4. | Mechanics of sheet metal forming : Z Marciniale, J L Duncan, S J Hu, | | |
| 5. | Mold design : R W Pye. GE Plastic Design Guide. | | |
| 6. | Handbook of die design : Ivan Suchy | | |
| Mode of Evaluation: Assignment / FAT / Project / Seminar | | | |
| Recommended by Board of Studies | 03-11-2018 | | |
| Approved by Academic Council | No. 53 | Date | 13-12-2018 |

| Course code | DESIGN COMMUNICATION | L | T | P | J | C |
|---|---|---|---|---|---|---|
| MDE 6014 | | 0 | 0 | 4 | 4 | 3 |
| Pre-requisite | | Syllabus version | | | | |
| | | v. 1.20 | | | | |

**Course Objectives:**

To communicate effectively with visually and verbally.

**Expected Course Outcome:**

Students will be able to,

1. Describe the typical process of how visual design artifacts are created.
2. Both receiving and delivering constructive criticism.
3. Develop a personal sense of aesthetic judgment, appreciating the spectrum between subjectivity and objectivity in design.

| | | |
|---|---|---|
| **Module:1** | | **4 hours** |
| Exercises on Graphic design | | |
| **Module:2** | | **4 hours** |
| Exercises on typography | | |
| **Module:3** | | **4 hours** |
| Exercises on expressive typography | | |
| **Module:4** | | **4 hours** |
| Exercises on Visual narratives | | |
| **Module:5** | | **4 hours** |
| Exercises on branding | | |
| **Module:6** | | **4 hours** |
| Exercises on dynamic visual layouts | | |
| **Module:7** | | **4 hours** |
| Communications through tangible and digital mediums | | |
| **Module:8** | **Contemporary issues** | **4 hours** |
| | **Total Lecture hours:** | **60 hours** |

**Text Book(s)**

1. Poppy Evans and Aaris Sherin, “The Graphic Design Reference & Specification Book: Everything Graphic Designers Need to Know Every Day”, Rockport Publishers, 2013

**Reference Books**

| | | | |
|---|---|---|---|
| 1. | Alex W. White , “The Elements of Graphic Design”, (Second Edition), Allworth Press,2011 | | |
| 2. | Steven Heller and Gail Anderson, “The Graphic Design Idea Book: Inspiration from 50 Masters”, Laurence King Publishing, 2016 | | |
| Mode of Evaluation: Assignment / FAT / Project / Seminar | | | |
| Recommended by Board of Studies | 03-03-2018 | | |
| Approved by Academic Council | No. 49 | Date | 15-03-2018 |

| Course code | INTEGRATED DESIGN RESEARCH | L | T | P | J | C |
|---|---|---|---|---|---|---|
| MDE 6015 | | 2 | 0 | 0 | 4 | 3 |
| Pre-requisite | | Syllabus version | | | | |
| | | v. 1.20 | | | | |

**Course Objectives:**

This course provides,

1. Putting the research areas together into one framework, a generic design research methodology that links the research questions together and provides support to address these in a systematic way.
2. Broad overview of the generic concepts of design, design research and need for a design research methodology.

**Expected Course Outcome:**

On completion of this course the students researching into design, helps

1. Develop a holistic understanding of the area of design research
2. Carry out design research effectively and efficiently.

| Module:1 | Introduction to Design | 4 hours |
|---|---|---|

Design Research , Main Issues , Lack of Overview of Existing Research ,Lack of Use of Results in Practice, Need for a Design Research Methodology.

| Module:2 | DRM: A Design Research Methodology | 4 hours |
|---|---|---|

Introduction, Methodological Framework, Types of Research Within the DRM Framework, Representing Existing and Desired Situations, Graphical Representation, From Reference Model to Impact Model, Success Criteria and Measureable Success Criteria.

| Module:3 | Research Clarification Process | 4 hours |
|---|---|---|

Identifying Overall Topic of Interest, Clarifying Current Understanding and Expectations; Clarifying Criteria, Main Questions and Hypotheses , Criteria, Research Questions and Hypotheses; Selecting Type of Research, Formulating Overall Research Plan , Overall Research Plan

| Module:4 | Descriptive Study I | 4 hours |
|---|---|---|

Understanding Design, Schools of Thought, Types of DS-I ,DS-I Process Steps; Reviewing Literature, Identifying Literature, Summarizing Literature; Determining Research Focus , Identifying and Defining Factors and Links of Interest, Formulating Research Questions and Hypotheses, Techniques for Refining Research Questions and Hypotheses, Developing Research Plan for DS-I.

| Module:5 | Prescriptive Study | 4 hours |
|---|---|---|

Developing Design Support; Types of Design Support; Types of PS; A Systematic PS Process ; Task Clarification; Conceptualization; Determining Main Functions, Generating and Selecting Support Concepts, Introduction Plan; Elaboration.

| Module:6 | Descriptive Study II | 4 hours |
|---|---|---|

| | | | |
|---|---|---|---|
| Evaluating Design Support Evaluation, Importance of Evaluation ,Types of Evaluation in DRM, Synthesis Example, DS-I Versus DS-II,Existing Evaluation Approaches; Types of DS-II , Initial DS-II, Comprehensive DS-II, Systematic DS-II Process | | | |
| | | | |
| **Module:7** | **Writing Up** | **4 hours** | |
| Publishing Results; Various Forms of Publication and Their Intent, Overall Structure of a Thesis; Approaches to Help Structure a Thesis, Table of Content Approach , Presentation Approach, Methodical Design Approach, Question and Answer Approach | | | |
| | | | |
| **Module:8** | **Contemporary issues:** | **2 hours** | |
| | | | |
| | | | |
| | **Total Lecture hours:** | **30 hours** | |

**Text Book(s)**

| | |
|---|---|
| 1. | Blessing, LTM, Chakrabarti, A. DRM A Design Research Methodology, Springer-Verlag, London, 2009. |

**Reference Books**

| | |
|---|---|
| 1. | Brenda Laurel, "Design Research Methods and Perspectives", MIT Press,Cambridge, 2004 |
| | |

| | | | |
|---|---|---|---|
| Mode of Evaluation: CAT / Assignment / Quiz / FAT / Project / Seminar | | | |
| Recommended by Board of Studies | 03-03-2018 | | |
| Approved by Academic Council | No. 49 | Date | 15-03-2018 |

| Course code | CREATIVITY AND INNOVATION | L | T | P | J | C |
|---|---|---|---|---|---|---|
| MDE 6028 | | 0 | 0 | 4 | 4 | 3 |
| Pre-requisite | | Syllabus version | | | | |
| | | V1.0 | | | | |

**Course Objectives:**

This course cultivates students in creativity skills for innovative solutions to product design problems. It enhances their 'out-of-the-box' thinking for design problems.

**Expected Course Outcome:**

- Students will develop skills in creativity and become comfortable with 'out-of-the-box' thinking.
- Students will learn to apply creativity for innovative design solutions.

| | | |
|---|---|---|
| **Module:1** | | **3 hours** |
| Writing poetry on topic and relating it to a product | | |
| **Module:2** | | **3 hours** |
| Explore and select an appropriate metaphor and then develop products through creative expressions. | | |
| **Module:3** | | **3 hours** |
| Problem identification and task analysis through role play | | |
| **Module:4** | | **3 hours** |
| Exercise on connecting the unconnected | | |
| **Module:5** | | **3 hours** |
| Deep Dive – Creativity method for developing new products**.** | | |
| **Module:6** | | **3 hours** |
| Quick mock-up development | | |
| **Module:7** | | **3 hours** |
| Developing new solutions to solve social issues. | | |
| **Module: 8** | **Contemporary issues** | **3 hours** |
| | | |
| | **Total Lecture hours:** | **60 hours** |

**Text Book(s)**

| | |
|---|---|
| 1. | Kelley, Tom, Jonathan Littman, and Tom Peters. The Art of Innovation: Lessons in Creativity from IDEO, America's Leading Design Firm. New York: Doubleday, 2001. |

**Reference Books**

| | |
|---|---|
| 1. | Wagner, Tony. Creating Innovators: The Making of Young People Who Will Change the World. New York:Scribner, 2012. |
| 2. | De Bono Edward, Lateral Thinking, Penguin (UK), 1972 |

| | | | |
|---|---|---|---|
| 3. | Christopher Jones. Design Methods Seeds of Human Future, Wiley, Interscience, 1970. | | |
| Mode of Evaluation: CAT / Assignment / Quiz / FAT / Project / Seminar | | | |
| Recommended by Board of Studies | 03-03-2018 | | |
| Approved by Academic Council | No. 49 | Date | 15-03-2018 |

| Course code | Craft, Creativity and Post-Modernism | L | T | P | J | C |
|---|---|---|---|---|---|---|
| MDE 6017 | | 0 | 0 | 4 | 4 | 3 |

| Pre-requisite | Syllabus version |
|---|---|
| | v. 1.0 |

**Course Objectives:**

1. Understanding the significance of craft in Industrial design
2. Understanding various creative process in craft
3. Ability to analyze various cultural roots and crafts in Indian tradition

**Expected Course Outcome:**

The students will have,

1. Understanding the significance of craft and creative process in Industrial Design
2. Ability to bring craft to industrial design for exploring form
3. Understanding the history of craft and various Indian traditions
4. Understanding the Postmodern interpretation of craft and its value in various Indian markets

| | | |
|---|---|---|
| **Module:1** | **Introduction to Craft** | 4 hours |
| Significance of craft for the field of industrial design. Tracing the origins of industrial design to craft. | | |
| **Module:2** | **Creative Process in Craft** | 4 hours |
| Materials and processes in various crafts. Methods for connecting traditional crafts with present day products. | | |
| **Module:3** | **Craft as a means of exploring form** | 4 hours |
| Study of form in bamboo and other craft. Explorations in form with craft as basis. | | |
| **Module:4** | **Cultural roots in craft** | 4 hours |
| Study on the history of craft. Influences of culture on crafts | | |
| **Module:5** | **Crafts and Indian traditions** | 4 hours |
| Introduction to post-modernism. Repositioning of craft in the post-modern era. Significance of craft as a creative base for current design practices. | | |
| **Module:6** | **Post-modern interpretation of craft** | 4 hours |
| Introduction to post-modernism. Repositioning of craft in the post-modern era. Significance of craft as a creative base for current design practices. | | |
| **Module:7** | **Craft design for urban and export markets** | 4 hours |
| Blending of new technologies for craft design. Strategies for urban and export markets with craft based post-modern design. | | |
| **Module:8** | Contemporary issues: | 2 hours |
| Contemporary discussion with the artists and designers. | | |
| | **Total Lecture hours:** | **30 hours** |

**Text Book(s)**

1. John Thackara (Ed), Design After Modernism, (Beyond the Object), 1989.

| **Reference Books** | | | |
|---|---|---|---|
| 1. | Jencks, Charles; Post-Modernism: A New Classicism in • Art and Architecture, Academy Editions, London, 1987 | | |
| 2. | Powell, Jim; Postmodernism for beginners, • Orient Longman, India, 1998. | | |
| 3. | McKim, Robert; Experiences in Visual Thinking, • Publisher: Brooks/Cole Publishing Company, 1980. | | |
| 4. | Victor Margolin (Ed), Design Discourse (History, Theory, • Criticism), The University of Chicago Press, 1989. | | |
| Mode of Evaluation: CAT / Assignment / Quiz / FAT / Project / Seminar | | | |
| Recommended by Board of Studies | 03-03-2018 | | |
| Approved by Academic Council | No. 49 | Date | 15-03-2018 |